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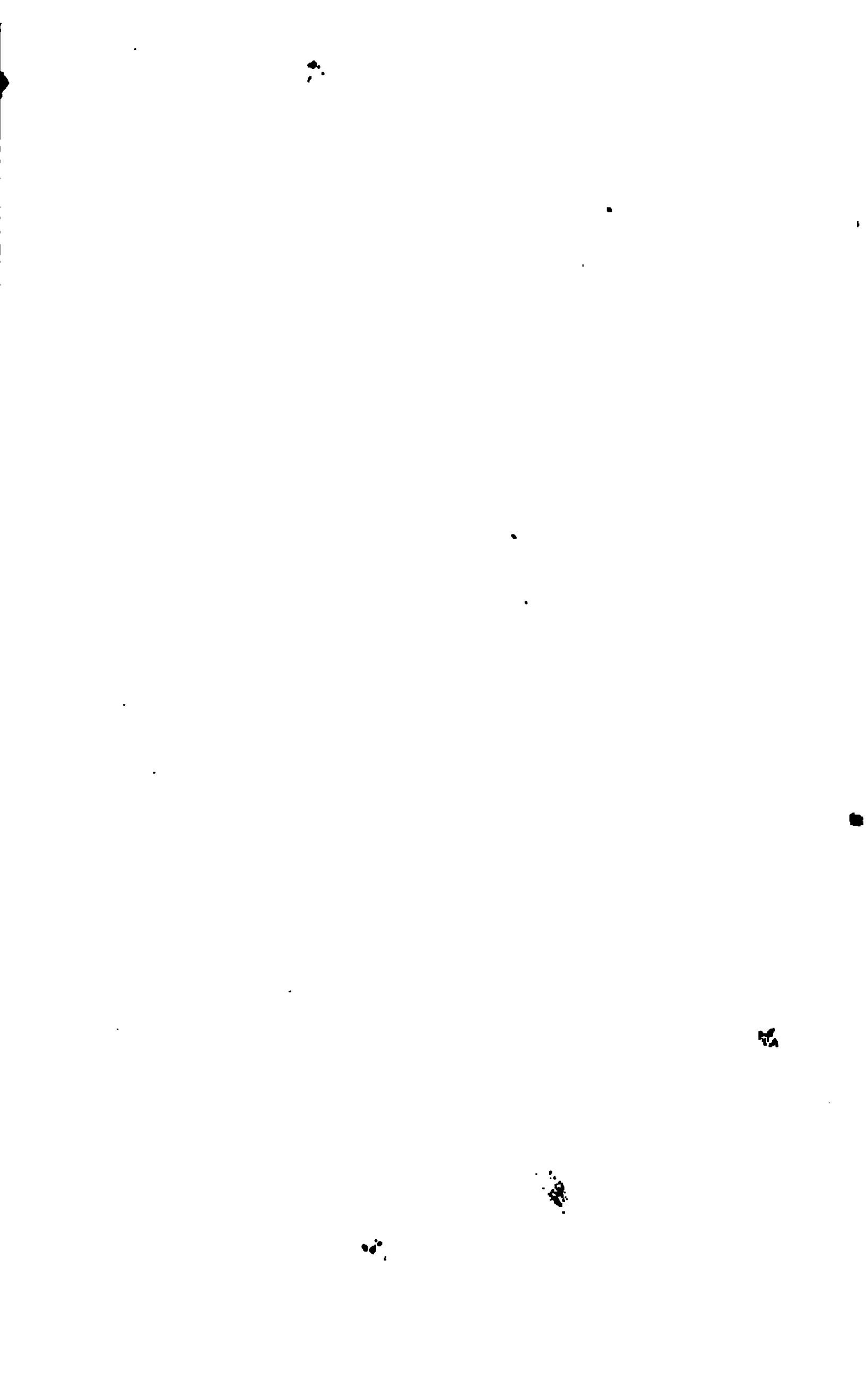
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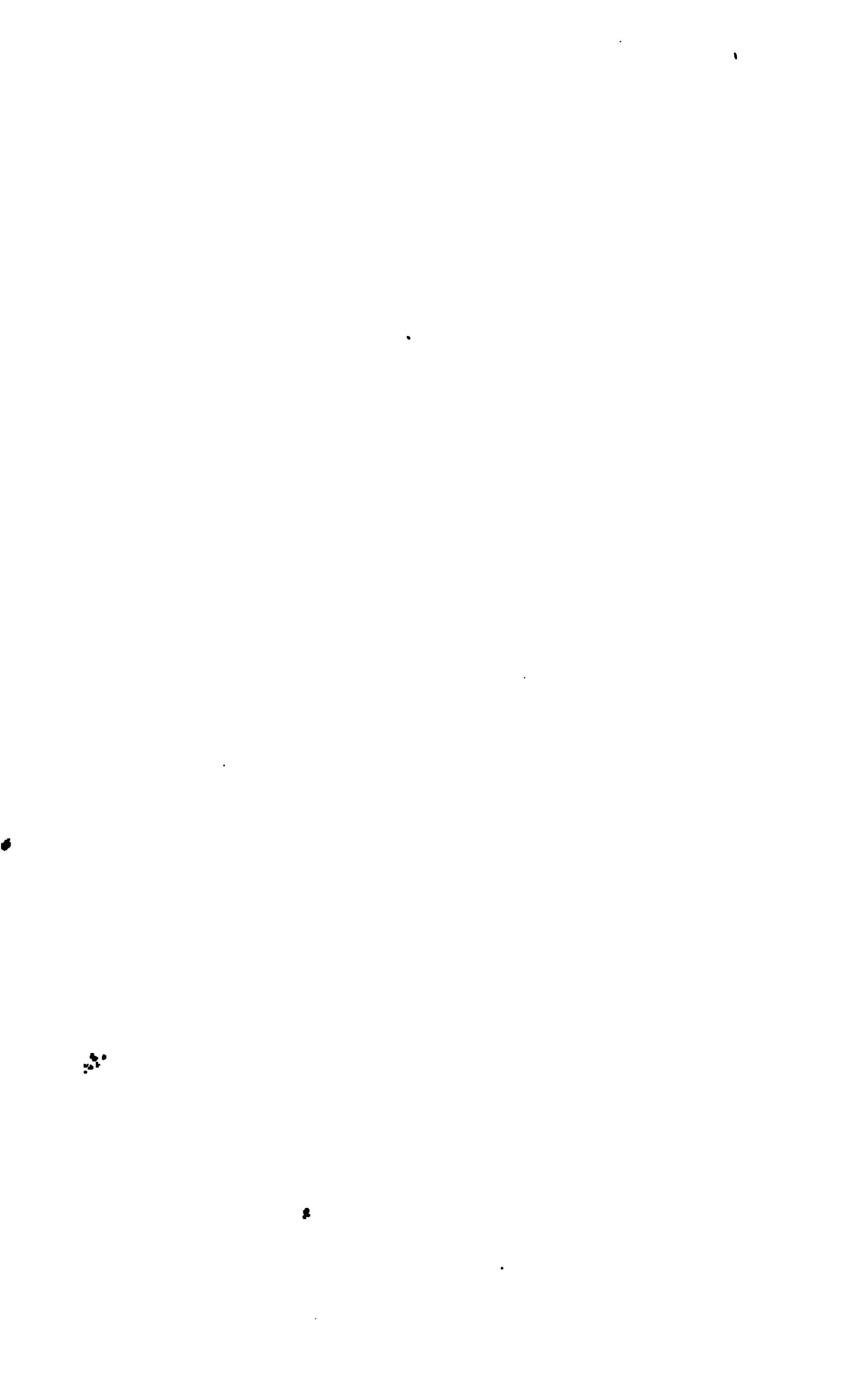




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OF THE

Specifications

RELATING TO THE

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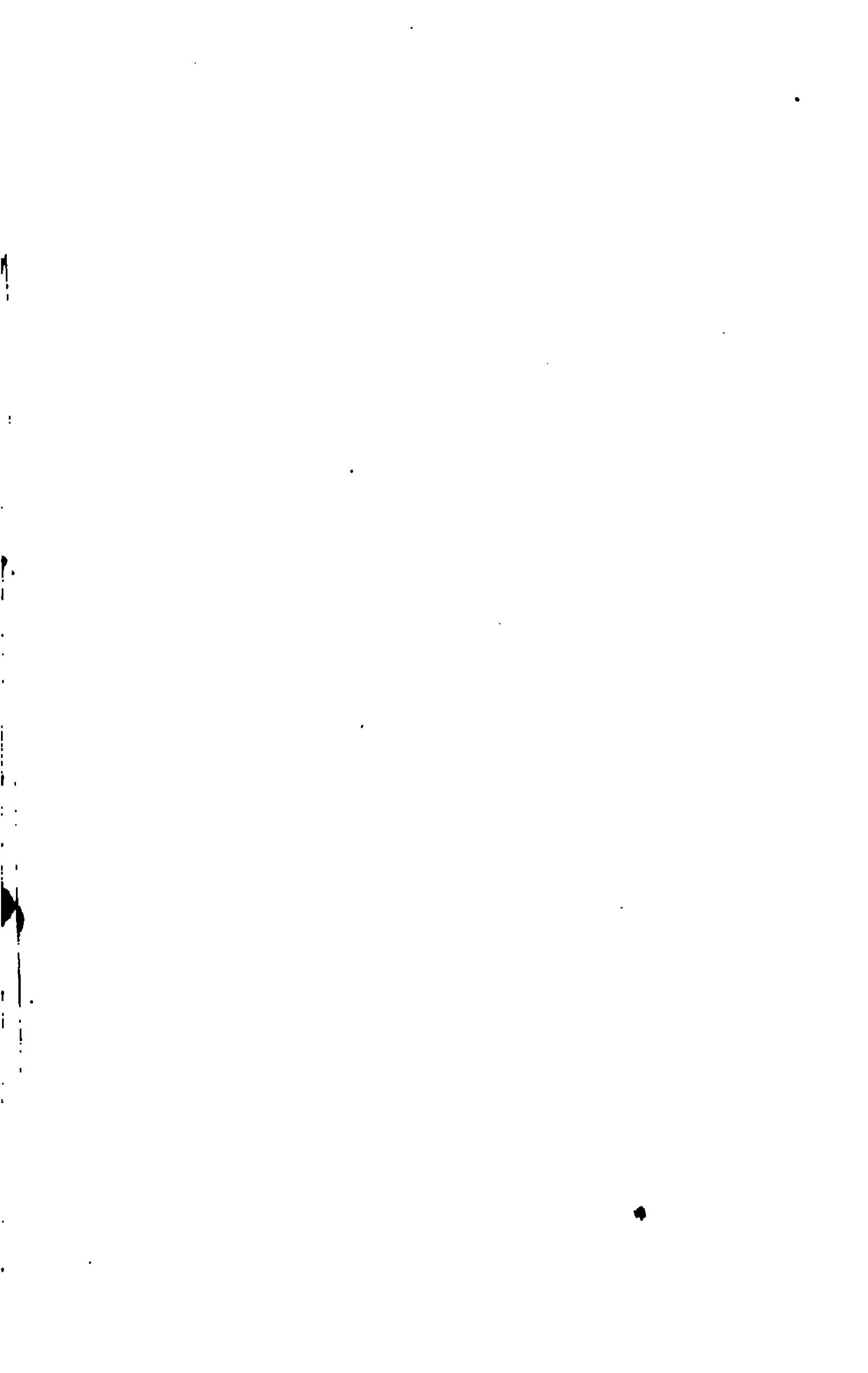
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The Specifications in which Gas has been referred to as a moving force have been purposely omitted from this volume, as belonging more appropriately to the series relating to the "Generation and Application of Motive Power."

B. WOODCROFT.

Great Seal Patent Office,
October 1860.



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THE MANUFACTURE OF GAS.

A.D. 1681, August 19.—Nº 214.

BECHER, JOHN JOACHUN, and SERLE, HENRY.—Grant for fourteen years of especiall licence, &c., for “A new way of “ makeing pitch, and tarre out of pit coale, never before found out “ or vsed by any other,” “which being putt into practice may be “ of great advantage to our subiects in generall.”

[Printed, 3d.]

A.D. 1694, January 29.—Nº 330.

EELE, MARTIN; HANCOCK, THOMAS; and PORTLOCK, WILLIAM.—Grant of “especiall lycence, &c.,” for fourteen years, for “A way to extract and make great quantities of pitch, tarr, and “ oyle out of a sort of stone,” of which there is sufficient plenty within our dominion of England and Wales.

[Printed, 3d.]

A.D. 1700. No. 330.

“especiall
lycense, &c., to
make pitch, tarr,
and oyl” from
“a sort of stone.” It is stated

“ac-

ock

and

Sr. —————.

✓ Drw. —————.

✓ Drw. —————.

✓ Drw. —————.

✓ Drw. —————.

ex-

cor-

lack

next

THE MANUFACTURE OF GAS.

“ and immediately over the coal in coal mines, which said black
 “ pitchy flinty roch or rock is to be first pounded with hammers
 “ into powder, and then put into a furnace, covered down close
 “ with an head to it, and worked with fire, which will extract the
 “ said oyl from it.”

[Printed, 3d.]

A.D. 1746, August 7.—N° 619.

HASKINS, HENRY.—“ New method of extracting a spirit or oil
 “ out of tar, and by the same process produce the finest of pitch.”

“ First, take any quantity of tar you please, so as not to more
 “ than half fill your still, which must be thoroughly cleaned from
 “ all manner of impurities, and more particularly from water, for
 “ if any quantity of that shouſd be left in it, it will be found to be
 “ exceeding troublesome and considerably hinder the operation.”

“ The tar may be cleansed either by boiling and straining, or by
 “ settling in tubs, or any other convenient vessel; then commit it
 “ to a double-neck pelican-headed still, made either of glass, iron,
 “ or copper, with capacious receivers and well luted, under which
 “ raise a fire of the first degree for six hours, by which time the
 “ particles will be thoroughly comminuated; then raise your fire to
 “ the scond degree for as many hours more, and then to the third
 “ degree for three hours more, in which time you will find first a
 “ pale acid phlegm to come off into the receiver, which must be
 “ changed, when a fetid volatile spirit or oil rises; lastly will come
 “ over a black glutinous oil, which keep for use.”

“ If you would have a more volatile or light oil, which may be
 “ more proper for many uses in physic, it may be done by repeated
 “ rectifications to what degree you choose.”

“ Lastly, the caput mortuum, which is what remains in the still
 “ after the distillation is finished, will be found to be the finest
 “ and best of pitch, which I am well assured of, not only from my
 “ own judgment but by the experience and testimony of many
 “ who have used it.”

[Printed, 3d.]

A.D. 1772, April 30.—N° 1015.

VAN HAAKE, CHRISTIAN WILHEM, Baron.—“ New invented
 “ secret art or mystery in extracting and making from a certain
 “ mineral several compositions called mineral tar and mineral oil,

“ which I substitute instead of tar or liquid pitch, intended and
“ used for the bottoms and other parts of ships and navigable
“ vessels; also vitriol, saltpetre, lamp-black, and caput mortuum
“ of the said mineral.”

“ A number of iron cylinders being prepared, a proportional
“ quantity of such mineral or coal is put therein, and a large
“ quantity of common burning coal is put round them and set on
“ fire, which causes a fluid matter or consistence to run or issue
“ from the mineral or coal in the cylinder, to which I give the
“ name of mineral tar, from which matter or consistence a water
“ is drained, and a particular quantity thereof thrown on loose
“ ground and let lye there until it impregnates by the air, and
“ when so impregnated I give it the name of vitriol. And also a
“ particular quantity of the said water is put into a hole dug for
“ that purpose in the earth, and covered over, so that no air can
“ get to the same, and let lye there till impregnated, and when so
“ impregnated I give it the name of saltpetre. And the residuum
“ dregs or dross remaining after I have made use of the said fluid
“ matter or consistence as aforesaid is what I then give the name
“ of caput mortuum (which is the natural consequence or operation
“ of burning the said mineral or coal to a fluid); and that by plac-
“ ing an oven or receptacle over the said cylinders to receive the
“ smoke or exhalation which ascends or issues from the fire (and
“ would otherwise evaporate in the air) is what I give the name of
“ lamp-black. And the said ingredients or different species of tar,
“ vitriol, and saltpetre (when so extracted and impregnated as
“ aforesaid) being all compounded or mixed and put together in
“ their respective due and fit proportions, they alone compose
“ that liquid composition so invented, found out and prepared,
“ substituted and used by me, for preserving such ships, vessels,
“ (and timber), in manner aforesaid, and by me called by the said
“ name of mineral tar or mineral oil.”

[Printed, 3d.]

A.D. 1781, April 30.—Nº 1291.

DUNDONALD, ARCHIBALD, Earl of.—“ A method of extract-
“ ing or making tar, pitch, essential oils, volatile alkali, mineral
“ acids, salts, and cinders from pit coal.”

This invention consists “ in admitting the external air to have
“ a passage or passages through the vessels or buildings in which

THE MANUFACTURE OF GAS.

" the coal, from which any of the above substances are to be distilled is put, whether by itself or along with limestone, flints, iron-ore, bricks, or any other substance, by which means the said coals after being kindled are enabled, by their own heat (without flaming), and without the assistance of any other fire, to throw off in distillation or vapour the tar, oil, alkalies, acid, and salts they contain into receivers or condensing vessels." This mode of obtaining tar, oils, &c., from coal, is in contradistinction to the method known or used for that purpose, namely, by "the distillation of coal in close vessels." The condensation of "the less coercible part of the vapour that comes off" is promoted "by commixing it with the steam of boiling water," and then by the application of cold water. By the admission of air into the condensing vessels, and causing the vapour to pass through other condensing vessels, different oils will be obtained according to their facility of condensation.

[Printed, 3d. *Repertory of Arts*, vol. i., p. 145. *Engineers' and Mechanics' Encyclopædia*, vol. ii., p. 762. *Rolls Chapel Reports*, 6th Report, p. 165.]

A.D. 1789, June 23.—N° 1689.

CONWAY, HENRY SEYMOUR.—"An entire new method of adapting or conveying the heat arising from the fire of coal employed in coke ovens for the working of steam engines, baking of bread, calcining and fusing of ores, warming rooms," and for various other such purposes. This invention consists generally in conveying through suitable flues the flame and heat and other matters distilled off from coal contained in a coke oven, and applying them for the purposes of heating.

[Printed, 4d.]

A.D. 1791, October 18.—N° 1832.

STONE, WILLIAM.—"A new method of applying the heat arising from ovens in which coke is burned or made to the distillation of volatile alkali, the evaporation of saline solution, the excitation of crystalline, and the sublimation of sal ammoniac, and a variety of other purposes."

This invention consists in the application of the heat derived from coke ovens to various useful purposes. The flame and heat is conducted from the ovens by suitable openings, and admitted

into suitable chambers, in which are placed the vessels containing the substance to be heated or evaporated. The openings from the ovens are provided with registers, for the purpose of regulating the amount of heat used. Several ovens may be worked together.

[Printed, 4d.]

A.D. 1791, October 31.—N° 1833.

BARBER, JOHN.—“ A method of rising [using ?] inflammable air “ for the purposes of procuring motion and facilitating metal- “ surgical operations.”

This apparatus consists of a “ metallic vessel called a retort, so “ contrived that (when heated by a circumambient fire) coal, wood, “ oil, or any other combustible matter may be put therein, and the “ smoke or vapour therein collected may be brought out by a small “ pipe, and conveyed in a regular stream into another metallic “ vessel, called an exploder, by means of an air pump, and a “ compressor or regulating bellows, which pipe opposing its orifice “ to another similar pipe which enters the exploder (on the opposite “ side from the pipe which brings in the inflammable vapour from “ the retort), and injects by similar means a proper quantity of “ atmospheric or common air, causing an admixture of the two “ airs, which, so mixed, will take fire on application of a match or “ candle to the mouth of the exploder, and rush out with great “ rapidity in one continued stream of fire, so long as the exploder “ is supplied with proper quantities of the respective airs. The “ fluid stream is also considerably augmented both in quantity “ and velocity by water injected into the exploder by means of “ another small pipe entering therein, which water is also intended “ to prevent the inward pipes and the mouth of the exploder from “ melting by the velocity and intenseness of the issuing flame. “ This water, as well as the airs, are forced into the exploder by “ means of a pump, which in lieu of common crank carries upon “ the axis of one of its wheels two esses or double portions of “ circles, whereby a more regular motion is procured than can be “ done by any crank work. This engine is wrought by the steam “ issuing from the mouth of the exploder, and may be applied to “ grinding, rolling, forging, spinning, and every other mechanical “ operation ; and the fluid stream may be injected into furnaces “ for smelting metallic ores, or passed out at the stern of any “ ship, boat, barge, or other vessel, so as by an opposing and im-

THE MANUFACTURE OF GAS.

“ pelling power directed against the water carrying such vessel,
 “ the vessel with its contents may be driven in any direction
 “ whatsoever.”

[Printed, 9s.]

A.D. 1792, March 15.—N^o 1861.

WARD, CHARLES WILLIAM.—“ A method of changing the smoke or vapor arising from the combustion of many kinds of substances into various useful materials, according to the substances burnt.” This invention consists in drawing by means of machines,” the vapour and smoke arising from fires and causing it to enter suitable vessels for the purpose of being condensed or decomposed; the vacuum so formed will cause fluids to rush in, and the action of the apparatus will resemble that of air pumps, water pumps, ventilators, bellows, air machines,” &c.

[Printed, 3d.]

A.D. 1792, December 22.—N^o 1928.

BARBER, JOHN.—“ A method for smelting and purifying fossil coal, iron stone, iron ore, and other metallic ores, and the calx thereof, by steam, air, and fire, and impregnating the same, and the matrix thereof with inflammable air, producing thereby a tough metal.” “ Take a quantity of iron stones, or iron ores with a quantity of fossil coals, put them in a furnace or any proper building, into which admit fire, and convey steam from a boiler or boilers by a pipe or pipes through an aperture or apertures made or left in the hearth. Observe, the pipe or pipes which convey the steam should not project into the furnace, but fall so far short thereof as to permit the steam to carry a quantity of atmospheric air in with it, by which means there will in general be a sufficient purified calx produced; but in case the calx so produced is not upon trial found sufficiently purified it must undergo the like operation of purifying by means of steam, coals, and fire, and so on, until it is effectually purified, as steam conjointly with coals and fire will eventually purify iron stones, iron ores, and the calxes thereof, and may in some instances smelt them at the same time. The purification may be facilitated by having a layer of water placed at the bottom of the furnace or building to receive the hot calx as it falls or

" is drawn out. In some cases injecting amongst your stones, " ores, and coals a proper portion of sal ammoniac or other men- " strum with the steam whilst they are purifying will be found " beneficial. Gold, platina, silver, copper, lead, and tin ores must " be reduced to a calx in the manner above specified, and the " effects will be the same. When the calxes are thus properly pre- " pared take a quantity of them, and also a quantity of fossil " coals or purified coals, put them into a smelting furnace, in " the hearth of which admit fire, and likewise make or leave an " aperture or apertures to admit and inject inflammable air from a " retort or retorts by a pipe or pipes either singly or conjointly " with air blast. Observe, limestone, charcoal, and other materials " which abound with inflammable air, by adding them in proper " quantities with your purified calxes may have a similar effect " to the inflammable air being admitted or injected, and in case " the retort should be out of order may be applied as a substitute. " The proportionate quantities of each of the materials neces- " sary to be mixed can only be attained by experience; this " process will produce a tough metal."

[Printed, 3d.]

A.D. 1796, March 6.—N^o 1979.

MEAD, THOMAS.—" Certain methods of exerting, putting, and " continuing in motion pneumatic, chemical, or pneumato-chemical " apparatus by the decomposition, recombination, expansion, and " condensation (separately or conjointly) of permanently elastic " fluids, which will produce power or force sufficient to put and con- " tinue in motion any kind of machinery to which they may be ap- " plied." Air, gas, or other permanently elastic fluids and heat or " combustible matter in a state of ignition are the agents employed, " and when the air, gas, or other permanently elastic fluid comes " in contact with the ignited combustible matter, or feels the " power of heat in a confined space or cavity (as in the chest) " properly supplied with cocks and valves it becomes decomposed " by the fire and expanded by the heat, and by the evolution and " expansion of its component parts acts upon a moveable dia- " phragm or piston, which is placed in the cavity for that purpose, " and exerts power and puts in motion the machinery which may " be attached to the diaphragm for that purpose. This may be " compared to inspiration. Into a part of the cavity occupied by

" the expanded fluid a solid body being then introduced displaces
 " and transfers the air, gas, or fluid that has sustained combustion,
 " or been expanded by the heat to that part of the apparatus
 " which is kept cool for the purpose of refrigeration, and there the
 " fluid becoming recomposed and condensed, and occupying less
 " space than before, forms an imperfect vacuum, then the atmos-
 " phere by endeavouring to restore the equilibrium presses upon
 " and forces back again the diaphragm or piston as in the act of
 " expiration. Thus is respiration imitated, and power produced
 " capable of exerting, putting, and continuing in motion any kind
 " of machinery to which it may be applied." The principle of this
 invention may be carried out by any suitable apparatus adapted
 to the purpose required.

[Printed, 6d.]

A.D. 1794, May 7.—Nº 1983.

STREET, ROBERT.—"Method to produce an inflammable vapour
 " force by means of liquid air, fire, and flame, for communicating
 " motion to engines, pumps, and machinery."

The apparatus consists of an iron cylinder, in which works a solid iron piston, made to fit the cylinder. The bottom of the cylinder is heated with fire. A few drops of "spirits of tar or " turpentine" are poured on to the hot bottom of the cylinder, and at the same time the solid piston is elevated so far by means of a lever, which causes a quantity of air to be sucked in by an aperture and produces an explosive mixture within the cylinder. This is ignited by a light and exploded, and the force of which forces up the piston and actuates the end of a lever attached to it, which works a pump or other machinery.

[Printed, 5d.]

A.D. 1799, September 23.—Nº 2342.

CROOKS, JOHN.—"A new method of making soap, and bleaching
 " by means and use of volatile, mineral, and vegetable alkalies,
 " either by joining them with each other, or using the volatile
 " alkalies by itself; and of killing vermine and preserving seeds
 " by those alkalies from birds and vermine [by means of oil from
 " schistus, &c.]" This invention relates chiefly to improvements in
 the process for "making soap," and in "bleaching," for which
 see Abridgments on these subjects.

Under the seventh head the Patentee describes the process of making a distilled liquor from "schistus" or "coal" for "destroying and expelling garden, field, and house vermine, and in the preserving of sown seeds and plants from being eat by vermin or birds, and in smearing sheep and other cattle." "The tar, oil, and volatile alkali is distilled from any species of schystus, and particularly from the sulphurous schystus in which there is pyrites in the known way in which tar is distilled from coal." The liquor from "sulphurous schystus" is preferred to that from "coal," because it contains "hepper sulphur." "The addition of quick lime will increase its bad taste and smell, and corrosive quality." The "oil" on the top of the liquor is scummed off and mixed with "volatile alkali" to render it soluble; "then throw both into the weak alkali which was below the oil scummed off; and, lastly, mix the whole with the hot lime to be steeped."

[Printed, 8d. See Repertory of Arts, vol. xiii., p. 81.]

A.D. 1804, May 18.—N^o 2764.

WINSOR, FREDERIC ALBERT.—"An improved oven, stove, or apparatus, for the purpose of extracting inflammable air, oil, pitch, tar, and acids from and reducing into coke and charcoal all kinds of fuel, which is also applicable to various other useful purposes."

"A metal, brick, or earthen stove, oven, retort, or vessel, is so constructed to reduce by means of fire and heat all raw fuel of any kind into coke and charcoal, without any or little consumption of the fuel, by which operation the smoke being extracted from all raw fuel, is thus conducted through cold air or water into a condensator, where, after being sufficiently cooled and purified, it undergoes a natural chemical resolution into tar, pitch, oil, acid, ammonia, and inflammable gas or air." An apparatus of this description may be also employed variously for heating purposes, namely, the direct heat from it may be used for heating a vessel; the hot smoke from it may heat a second vessel; the inflammable gas may be used to heat a third vessel; and a fourth vessel may be heated by the resulting coke or charcoal. The charcoal may be used in making gunpowder; the pitch and tar for preserving wood, &c.; the acid liquid for making alum and other chemical substances, and preparing ships' sails; the ammonia

may be used for making salammoniac, in tanning, dyeing, and other arts; the two together as a disinfectant. "The inflammable gas or air being purified, may be led in a cold state through tubes of silk, paper, earth, wood, or metal, to any distance in houses, rooms, gardens, places, parks, and streets [and other places], to produce light and heat," or for any other purpose, such as "for increasing and multiplying force and power."

[Printed, 3d.]

A.D. 1805, March 9.—N^o 2827.

DENIZE, JOHN BAPTIST.—"A new mode of procuring a greater quantity of resinous, bituminous, and oily substances from various articles." The substances used for this purpose are "bitumens," "the different kinds of fossil," "coal," "peat," "fuccinum," "or amber," "asphaltum," "inflammable substances," "soots," "gums," "mucilaginous bodies," "resins," "glue," and other matters of that character, "wood," "turf," "bones," "horn," "hair," "skins," "fish," "blood," "excretions," and other like substances. These substances separately, or mixed in preference in various proportions, are introduced into a suitable still and heat is applied. The result obtained is various, and depends upon the "dissolvent" used.

[Printed, 4d.]

A.D. 1806, June 12.—N^o 2941..

HEARD, EDWARD.—"Certain means of obtaining inflammable gas from pit coal in such a state that it may be burned without producing any offensive smell."

The object of this invention is to withdraw the sulphur from gas obtained from coal; and for this purpose the Patentee stratifies "lime with the coal, in the retort, stove, or other close vessel in which they are placed for operation, or suffers the gas when produced to pass over lime previously laid in an iron or other tube, or any other shaped vessel adapted for the purpose, and expose it to heat. After the gas has been conducted into a refrigerator, and all condensable matter is deposited, it is then suffered to enter the conveying tubes, and burned in the usual manner." The fixed alkalies or alkaline earths, such as "barites, strontian, or carbonate of lime," when deprived of their

carbonic acid may be substituted for lime, also such metals or their oxides, as "iron, manganese, zinc, copper, lead, &c."

[Printed, 3d. See *Repertory of Arts*, vol. x. (*second series*), p. 81. *Rolls Chapels Reports*, 7th Report, p. 103.]

A.D. 1808, March 3.—N^o 3113.

WINSOR, FREDERIC ALBERT.—"Certain improvements upon my former patent oven stove, or apparatus for carbonizing all sorts of raw fuel and combustibles, and reducing them into superior fuel of coke and charcoal, as well as for extracting and saving during the same the oil, tar, pyroligneous vegetable acid, and ammonial coal liquors, and for extracting and refining all the inflammable air or gas, so as to deprive it of all disagreeable odour during combustion, and rendering the gas itself salutary for human respiration when properly diluted with atmospheric air, and various methods of applying the above several products to useful purposes."

"Now know ye, that I, the said Frederic Albert Winsor, for divers good causes and considerations me hereunto moving, have surrendered and yielded up, and by these presents do surrender and yield up into the hands of his said most Excellent Majesty King George the Third, the said recited Letters Patent, and the licence, powers, privileges, and advantages thereby granted to me, the said Frederic Albert Winsor, my executors, adm̄ors, and assigns, and all my estate, right, title, and interest of, in, and to the same, together with the said recited Letters Patent, to be cancelled."

Dated, August 31st 1808.

[Printed, 3d.]

A.D. 1809, February 7.—N^o 3200.

WINSOR, FREDERICK ALBERT.—"Improvements upon my former patent oven, stove, or apparatus for carbonizing all sorts of raw fuel and combustibles, and reducing them into superior fuel of coke and charcoal, as well as for extracting and saving during the same process the oil, tar, pyroligneous vegetable acid, and ammoniacal coal liquors, and for extracting and refining all the inflammable air or gas, so as to deprive it of all disagreeable odour during combustion, and rendering the gas itself salutary for human respiration when properly diluted

" with atmospheric air, and various methods of applying the
" above several products to useful purposes."

These improvements consist, first, in contriving so that the fires and flues connected with gas retorts "are in the midst of the raw fuel to be carbonized," and not made to play round them. The stoves may be made of "iron or other metal, earthen or stone ware, pipe clay, &c." The refuse coke and coal are only used to burn in such cylinders. These cylinders containing the fires may be of any suitable form. The "oil tar" obtained may be converted into "essential oil, pitch and asphaltum." The ammoniacal liquor may be applied to agriculture, dyeing and other chemical purposes, and the coke may be applied as fuel in various ways. Several such stoves may be worked together in such a manner that one may be emptied while the others are in operation, whereby the process of making gas will become continuous. The gas coal may be put into shapes of iron, clay, &c., by which means the coke will be obtained of any size or shape, and breakage and waste will be avoided. Second, in passing the gas so produced through suitable coolers, and then through vessels subdivided and perforated with small holes and filled with "lime water, or cream of lime," which withdraws the "sulphur and other offensive particles." Third, the heat from the stoves, as well as that from the gas, and from the hot smoke, may be made available generally for heating and evaporating purposes. Fourth, lime may be put into the bottom of the stove along with the coal.

[Printed, 4d.]

A.D. 1810, April 6.—N^o 3323.

STANCLIFFE, JOHN.—"Improvements in apparatus for combination and condensation of gases and vapours applicable to processes of distillation." These consist, first, in making stills for the combination and condensation of gases and vapours," in such a manner that the top or roof of the still is separated from the bottom, and may be lowered on to it; an air and gas-tight luting being formed by immersing the lower edges of the top into liquid contained in a suitable space left round the bottom for that purpose.

Second, in constructing the "refrigeratories" in such a manner that the hoods or covering parts will fit into a fluid lute, similar

to that of the still. The pipe which brings the gas to the refrigeratory, and that which takes it away are luted in the same way; such pipes can be readily disjointed, but when put together form a perfect fitting. The axis of the agitator may also be fluid luted by surrounding it with a hood or small inverted dome, the bottom edges of which are immersed in fluid contained in a circular space provided for the purpose, and the agitator itself may be of such a form as to sweep the whole of the interior of the refrigerator. The boiler or still may also be fitted up with a fluid luted agitator, and the refrigeratories may be immersed in water to keep them cool. A bellows may be employed to propel the gas or vapour into and through the refrigeratories.

Apparatus fitted upon this principle may be applied to many purposes, such as to the rectification of various liquids, acids, alkalies, &c., impregnating liquids with carbonic acid gas, &c., in the "depuration" of linen, wool, woollens, cottons, &c.

The fluid lute may be of water, saline solutions, mercury, fusible alloys, oil, wax, tallow, &c.

[Printed, 6d.]

A.D. 1810, April 6.—N^o 3325.

SPEER, WILLIAM.—"A new or improved art, method, or process of increasing the inflammability and combustability, and of improving the light of oils used for burning, particularly applicable to the oils refined according to the patent process of me, the said William Speer, but which will also be found to improve other oils when used for burning." The process consists in adding to "fixed oils," or oils derived from seeds or other parts of certain vegetables, or from fishes and other animals by the application of heat and moisture, and sometimes of pressure, certain proportions of more inflammable oils, such as the oils derived from various oderiferous vegetables, &c., or empyreumatic oils derived from vegetables, and from pit coal and other bituminous mineral substances, by the application of heat to closed vessels containing them, or of camphor. In preference, the Patentee puts into a retort and distils a mixture of two pounds camphor, twenty gallons of oil of turpentine, or rectified oil of tar, or rectified oil of pit coal, to which is added three pounds oil of rosemary, and half a pound of the oil of organum. The very inflammable essence obtained is mixed with the fixed oil in suitable

proportions, and used for burning. The inflammable essence and fixed oil are mixed together by agitation in a churn or other proper vessel.

[Printed, 3d.]

A.D. 1810, May 2.—N^o 3333.

MAIBEN, JOHN.—“Improvements in the construction of apparatus for making carbonate hydrogen gas from pit coal, and for using the same in lighting mills, factories, houses, shops, lamps, &c. therewith.” This invention consists, first, in an improvement on the shape of the retort, which the Patentee proposes to make of an oblong shape, “nearly resembling the folio volume of a book, with a cast metal vent built upon it, so that the fire affects every part except the mouth.” “The mouth is shut by a plate of metal with a groove in it to receive the retort; this groove, being filled with wet sand, is fixed on by a screw.” The gas when produced is conducted by means of pipes into a “tar pot,” and then through a “water chest.” The water chest has plates of intersections, through which the gas must “wimple” before it is conducted to the reservoir. The “reservoir” is a vessel made of any suitable material such as stone, wood, or metal, and may be filled with water, to near the bottom of which the gas is conducted in a pipe and allowed to escape into the water. As the gas rises through the water, mechanical means, such as a plate perforated with holes, &c., are employed to divide the gas, that it may be cleansed more thoroughly. The displaced water at the same time escapes by a syphon pipe with a cock at the bottom formed on the principle of a bird’s drinking glass. The gas is caused to pass forward into the consuming pipes by means of water being introduced into the reservoir, regulated to one pressure by means of a syphon. In passing along the continuity of the gas is broken by taking it through some water contained in a separate vessel; accident from fire going back the pipes to the reservoir is thereby protected, and this vessel may be made to equalize the pressure of the gas in the mains. The Patentee proposes to use pipes made of “charred wood, covered with the fat of animals coated with varnish;” also “tubes of glass.” He also proposes to cover the reservoir with “a large flat plate of glass.”

[Printed, 3d. See Repertory of Arts, vol. xvii. (second series), p. 193.]

A.D. 1814, April 18.—N^o 3803.

READ, JOHN.—“The means of raising and conveying water, “ steam, gas, or any other fluid, by pipes of purified earth.

“ Soft pliable clay or marble, or both mixed together,” being worked together to a “complete puddle,” “sieved through a fine “sieve,” and then “worked by the hand, or ground in a common “clay mill,” becomes ready for making pipes. The mode of forming pipes is as follows:—“String them on a staff on a potter’s “wheel, in lengths about fifteen inches, more or less, and from “half an inch to twelve inches internal diameter, and in substance “or thickness from half an inch to three or four inches, as cir- “cumstances may require, and form them so as to fix or lie in “any direction that may be necessary, and fasten or connect them “with spigot and faucet joints, and others with flanch joints.” Pipes so formed should be dried very gradually, and bored true in the inside when required, then burned in a kiln. Such pipes may be applied to various purposes, such as pump barrels and trees. In connecting such pipes as are made with spigot and faucet joints, Parker’s Roman cement is preferred.

[Printed, &c. See Mechanics’ Magazine, vol. ii., p. 360; also vol. iii., p. 168.]

A.D. 1815, June 13.—N^o 3929.

TAYLOR, JOHN.—“A new mode or means of producing gas to “be used for the purpose of affording light.”

The Patentee claims “the exclusive right of using, in any way, “all processes of distilling bones or other animal matter, by “which an inflammable air or olefiant gas, applicable to the pur- “poses of giving light, shall be retained and employed.” Any suitable mode of distilling the bones or animal matter may be adopted, but the Patentee shows a mode whereby the animal matter in a fluid state is allowed to trickle down a pipe made of metal, or other material which will resist fire, heated to redness. The gas thereby produced is caused to pass through a box, not heated, where any excess of fluid is detained, and again through a red-hot pipe, and on to the gasometer. “Any kind of “animal, vegetable, or mineral oil, fat, bitumen, or resin, which “is or can be rendered fluid by heat or otherwise,” may be em- ployed in like manner. In order to purify gas so made it should

be passed through vessels containing lime and water, and other vessels containing dilute sulphuric or muriatic acids.

[Printed, 7d. See *Repertory of Arts*, vol. xxviii. (*second series*), p. 1. *Engineers' and Mechanics' Encyclopædia*, vol. i., p. 595. *Rolls Chapel Reports*, 8th Report, p. 107.]

A.D. 1815, December 9.—N^o 3968.

CLEGG, SAMUEL.—“An improved gas apparatus.”

This invention relates, first, to an improved form of retort. This retort or distilling chamber is flat, circular, made of metal plates, and about twelve feet in diameter, and placed horizontally. It is fitted up internally with a perpendicular shaft, to which are attached radiating arms, and which is capable of being made to revolve. The fire or furnace that heats the retort is placed to one side of its circumference, so that one part of the retort is heated more than another. The coals are placed in shallow boxes, and these boxes are suspended from or attached to the radial arms. A slow rotary motion being given to the shaft, the different boxes are gradually turned round from the cool side of the retort (where there is suitable provision made for taking out those that are exhausted, and replacing them with boxes filled with fresh coal) to the heated side where the gas is generated. The gas may be drawn off in the usual manner.

Secondly, relates to a mode of “purifying gas,” and consists of a large closed vessel formed “like a hopper,” in which is placed a “trough” containing lime water; in the trough is placed an inverted vessel, into which the gas is caused to enter, and from which it escapes by numerous slits in its sides, and bubbling up through the lime water contained in the trough enters the enclosing case and proceeds through a suitable pipe to the gas holder. The inverted vessel is provided with a small shaft, on which revolving blades (in preference) are fixed for the double purpose of working into and keeping open the above-named slits, and agitating the lime water and exposing it to the gas. The lime trough being supported by a moveable centre may be inclined to one side and emptied when required, and again filled with fresh liquor.

Thirdly relates to a “gauge or rotative gas-meter,” for measuring out and registering the quantity of gas which passes through a pipe, and may consist of a closed box of any convenient figure or dimension, in which is placed a hollow rim or internal circular chamber, supported by arms from a centre, and capable of revolv-

ng easily. The centre is made hollow for the purpose of admitting the gas, which flowing through arms of a peculiar bent construction enters the hollow rim. The hollow rim is divided by two partitions into two chambers, each having a separate bent arm to supply it with gas. The outer box and hollow rim communicate with each other by an opening in each chamber, and the chambers communicate with each other by a valve in each partition. In working this apparatus a certain quantity of water is put into the box, which flowing through the opening fills the hollow rim to the same level. The gas then flowing through the lower bent arm for the time being into the space in the lower compartment, between the surface of the water and the partition of that compartment, and having more force or pressure than the gas above the partition, which is escaping to the gasometer or burner, causes the hollow rim to move round and make half a revolution. The upper arm being bent after the manner of a syphon, and being filled at the proper period of its revolution with water by means of a small bucket which is attached to and revolves with the hollow rim, allows of no passage for gas through it till its half turn downwards is completed, and it has emptied itself of its water. The first arm is at the same moment filled with water as the second had been, and the flow of gas through it stopped, and the second arm, which is now the lower one, being open, and its mouth above the surface of the water begins to fill its chamber as the first had done, and thus a continuous rotary motion is imparted to the hollow rim by means of a suitable pipe attached to the outer case so long as gas is drawn off for the purpose of storeage or consumption. The partitions in the two chambers have each a valve opening in one direction, which admits of the water flowing freely from one to the other, (but not the gas) and thereby preserving its proper level.

The meter may be constructed with three or more divisions in the hollow rim, and instead of the gas escaping into the outer box or casing the case may be done away with and pipes introduced, and so placed that they will be open and freely communicated with the escape, pipe, which in this instance, is one end of the hollow centre, the other end, separated by a diaphragm, being used for the admission of the gas as before. The valves for allowing the water to flow freely from one chamber to the other, and to retain its level, may be substituted by open mouthed pipes so bent into scrolls that they will at all times act as siphons, retaining sufficient water

at the upper period of the revolution to prevent any flow of gas through them, but at the lower period of the revolution, and while under water to admit of its passage from one chamber to the other. Various devices are required to insure the proper filling and emptying of the bent arms, and bent or scroll pipes (for which see Specifications). Suitable indicating apparatus may be attached to such meters to show the number of revolutions made.

Fourthly, relates to a self-acting governor for regulating the efflux or discharge of gas or water through any opening, and consists, first, of a short pipe which is divided by a partition into two parts; the bottom of this pipe dips into a cup or small vessel containing mercury or other fluid, and which is suspended from an oscillating beam. In the above partition there is an opening or passage for the gas to pass from one division to the other, one division communicates with the gas supply pipe, and the other with the exit pipe. When the oscillating beam is caused to elevate the cup of mercury, the communication between the two divisions through the opening is so far closed and the flow of gas reduced, and vice versa. The oscillating beam is actuated by the elevation and depression of a counterpoised small gasometer, with which it is connected. This gasometer is in communication by means of a branch pipe with the gas exit pipe, and is elevated or depressed according to the pressure of gas in that pipe; when elevated by excess of pressure the cup of mercury is also elevated, when the supply of gas will be reduced or cut off altogether as required.

[Printed, 1s 7d. See Repertory of Arts, vol. xxx. (*second series*), pages 1, 65, and 129, vol. viii., (*third series*), p. 122, and 124, vol. ii. (*new series*), p. 352 and vol. vii. (*new series*), p. 172. Mechanics' Magazine, vol. xi., p. 322. Webster's Reports, vol. i., pages 103, 106, 112, and 119. Webster's Patent Law, pages 17, 66, 67, 80, 84 and 116 (also page 132, case 92, and p. 135, case 109). Carpmal's Reports on Patent Cases, vol. i., pages 480, 487 and 488. Parliamentary Report, 1828 (Patent Law), p. 212. Carrington and Payne's Reports, vol. i. i. p. 513. Moody and Monk's Reports, p. 283. Russell and Mylne's Report, vol. i., p. 166. Mylne and Craig's Reports, vol. iii., p. 428. Barnewell and Cresswell's Reports, vol. ii., p. 63.]

A.D. 1816, May 14.—N^o 4029.

WILSON, DANIEL. —“ New and improved apparatus to be employed in the distillation of animal, vegetable, and mineral substances, and in various other processes.” These improvements consist, first, “ in performing the distillation of dry animal, vegetable, and mineral substances in tubes, cylinders, crucibles, or retorts made of cast iron, wrought iron, copper or fire-clay

placed through the centre of a limekiln fire in such a manner as to be entirely surrounded with the ignited part, except at their extremities, which are fitted with moveable covers of the same or other materials, in order that they may be charged with and emptied of the matter to be distilled." Six of such retorts may be fitted into one limekiln, the heat of which is made available for the purpose of distilling such substance as "coal, wood, bones, woollen rags, horns, hooves, hair, or leather, in order to procure coke, carburetted hydrogen gas, tar, ammoniacal liquor, hydro-ligneous acid," &c.

Second, consists of an apparatus for the distillation or evaporation of liquid substances composed of two parts, namely, an outer and an inner metallic casing, with a space left between. The space between is partly filled "with an oil, tallow, resinous or fatty matter;" and the heat of the fire is transmitted through this medium to the liquid to be distilled contained within the inner vessel, which may be closed, if required, with a cover. Such a double cased evaporating vessel should be provided with a pipe to conduct away the vapour arising from the oil, &c., which vapour may be condensed, if required.

[Printed, 7d.]

A.D. 1816, May 27.—N° 4035.

REDDELL, ISAAC HADLEY.—" Improvements in or on the means of lighting the interior of offices, theatres, buildings, houses, or any place where light may be required."

First, by this invention the gas pipes which bring the gas into the interior of such buildings are conducted through or cased within larger pipes, which larger pipes proceed to the burner and communicate at the other end with the atmosphere. The space between the inner gas pipe and the outer casing forms a channel whereby the heated and burned air is carried out of the building. The burner may be enclosed in a glass lamp, to which the outer piping is connected.

Second, the gas piping may be cased in a larger pipe communicating with the exterior of the building, through which enters the required amount of air for the combustion of the gas; another pipe being placed over the burner in a glass to convey away the burned air.

[Printed, 5d.]

A.D. 1816, July 27.—N^o 4046.

WARBURTON, HENRY.—(A communication.) “ A method of “ distilling certain animal, vegetable, and mineral substances, “ and of manufacturing certain of the products thereof.” The substances to be distilled, to which this invention is applicable, are “ bone, horn, animal offal, wood, and peat, and such coal as “ is capable, on being heated and submitted to distillation, of “ yielding such a quantity of inflammable gas as will suffice for the “ operations of this invention.” The principle of the invention consists in using the gas itself produced from such substances for the purpose of heating the retorts containing the substance to be distilled. The vapour and gases which are distilled may be conducted into condensors where the liquid or condensable portion may be collected, and the incondensable and inflammable gases may be conducted by suitable pipes directly to the retorts to be there burned or conveyed to suitable gasometers, and reserved for future use. Several retorts may be fitted up and work together in such a manner that the gas from one retort in full action may be used to heat another retort; and suitable valves and registers are provided for the purpose of directing the current of gas as required. The products claimed in this invention “ are the pyroligneous acid, “ however distilled from wood or peat; and the ammonia dis-“ tilled from bone, horn, animal offal, or coal.” The condensed products from wood or peat may be separated one from the other by repose; the oils may be used to decompose sulphate of soda in a reverberatory furnace, and the alkali thus obtained may be used to saturate the pyroligneous acid obtained from the wood or peat. The pyrolignate of soda obtained may be purified by filtrations and other means, and crystallized. Acetate of soda is obtained from the pyrolignate by fusing it, and then dissolving out a clear solution; or by adding to a solution of pyrolignate a suitable quantity of oxide of tin, or a suitable quantity of alumina, then boiling the mixture and allowing it to subside; or by means of a suitable quantity of a salt of lead, or oxide of lead, the lead being afterwards removed by some sulphuric, sulphurous, or sulphuretted compound, or by means of the action of charcoal. Acetic acid may be obtained by adding sulphuric acid to the pure acetate of soda, and distilling the mixture, when great purity is required. Verdigrase may be obtained by adding pyrolignate or acetate of

soda to sulphate of copper in suitable proportions. The ammoniacal salt obtained from the bones, &c. may be purified by the addition of alumina.

[Printed, 9d.]

A.D. 1817, February 6.—N^o 4100.

WEST, JAMES ATKINSON.—“ Improvements in and on lustres, “ chandeliers, lanthorns, and lamps of various descriptions, and “ in the manner of conveying the gas to the same.” These improvements relate to a mode of regulating the “ flow of gas,” and may consist of a closed vessel, in which is placed a small gasometer, the elevation of which by pressure of gas elevates a flat circular plate or valve, and brings it more or less into contact with the mouth of the entrance gas-pipe, and thereby shuts off more or less the supply of gas required.

[Printed, 5d.]

A.D. 1817, March 1.—N^o 4106.

WILSON, DANIEL.—“ New and improved gas light apparatus, “ processes, and philosophical instruments.” These relate, first, to the purification of coal gas from “ sulphuretted hydrogen,” by means of “ ammoniacal gas,” and may consist in causing a stream of ammoniacal gas generated from ammoniacal liquor by lime, to mix with the coal-gas in its passage to the gasometer. The mixed gases may be caused to pass through a perforated plate placed under the surface of water contained in a suitable vessel.

[See *Repertory of Arts*, vol. xxxii. (*second series*), p. 11.]

A.D. 1817, May 17.—N^o 4122.

BOUND, WILLIAM, and STONE, WILLIAM.—“ A method of “ applying certain apparatus for converting the fuel used for heat- “ ing the retorts of a gaslight apparatus into coke or charcoal.” This invention consists in combining a coke-oven with gas retorts, whereby the heat from the coke-oven will generate gas in the retorts. To effect this object seven retorts of a suitable shape are placed over the coke-oven, the heat from which is conducted by suitable flues under, around, and over the retorts.

[Printed, 10d.]

A.D. 1817, July 10.—Nº 4139.

BRAIN, RICHARD FARMER.—“ Improvements calculated to “ obtain or generate gas in a more economical manner than “ heretofore, from coal or any other article, material, or substance “ for lighting or heating houses, manufactories, or other places “ where light or heat is required; and which improvement or “ apparatus may also be applied to other useful purposes.”

This invention consists “ in placing a retort by the side, at the “ back, or in any common house fire or other fire-place (such as “ at the side or at the end of steam boilers or other pans), for the “ purpose of producing gas for lighting up dwelling houses or “ other places. The retort is made of cast, rolled, or hammered “ iron or steel; its size must be regulated according to the “ quantity of light required.” For twelve burners the dimensions may be 18 in. by 10 in. by 7 in. deep, and may be charged with 15 or 20 lbs. of coal or other suitable material. “ A flue is adapted “ to it in the same manner that it is applied to common iron ovens, “ and regulated in the same way by a damper; it may be charged “ in the inside of the building, or by turning the mouthpiece the “ other way on the outside to the open air.” The gas produced in this apparatus is passed into a condensor, so formed that the tar therein condensed will again trickle back into the retort and be converted into gas. .

[Printed, 5d.]

A.D. 1817, July 19.—Nº 4142.

PHILLIPS, REUBEN.—“ A new and improved method of purifying gas for the purposes of illumination.”

“ I take any quantity of well-burnt lime and pour water on it “ till it falls to powder. I then mix it with a further quantity of “ water, in order to bring it into such a state that the particles of “ lime may adhere slightly to each other, but not to such a degree “ as to prevent the free passage of the air between them. This “ mixture must be placed six inches deep, more or less, on “ moveable perforated shelves in a vessel, the top of which is “ guarded by a water joint, and underneath is a pipe to allow the “ passage of the gas that way, so as that the gas may pass from “ the bottom of the vessel to the top, thro’ the perforated “ shelves and lime mixture, or from the top to the bottom as may

" be found most convenient, the purification being effected by the
" gas being caused to pass through the layers of lime mixture ;
" but where the quantity of gas to be purified is very large, I
" arrange a set of these vessels, consisting of five, or nine, or more,
" according to the size of the gas works, each vessel containing one
" or more shelves. These vessels are placed in any way which
" convenience may require, but I prefer a circular arrangement
" [shown in the drawings]. The vessels being without bottoms
" stand in a cistern of water or other fluid about six inches deep,
" so that the gas cannot pass that way."

[Printed, 5d. See *Repertory of Arts*, vol. xxxiii. (*second series*), p. 67.
Rolls Chapel Reports, 8th Report. p. 121.]

A.D. 1817, August 5.—Nº 4154.

PERKS, JOHN.—“ Improvements in the apparatus for manufacturing, purifying, and storing gas.” These improvements, in so far as they relate to apparatus for manufacturing gas, consist in arranging together a number of retorts, made of iron or other metal, say twelve of them, in a circular form, with an additional one placed in the centre, “ by which means they become as it were one large vessel, divided by their sides into separate compartments, and by separating the spaces contained within the cylinder of retorts (by means of bricks and Welch lumps), and forming others [spaces] on the outside, I am enabled to convey the flame and heat from the fireplace” in such directions to and fro and among the retorts as will produce economical effects, never before known or made use of. These improvements relate secondly, to an apparatus for “ cooling, condensing, and thereby purifying” gas made from pit coal, and consists in causing the gas to pass through pipes, while immersed in a cistern containing and continuously supplied with cold water. The Patentee shows a mode whereby a large surface in small compass can be exposed to cooling. The pipes through which the gas circulates are bolted to the bottom of the water cistern, and the bottom has holes cut in it to correspond with the pipes. The pipes are attached at their upper ends in couples by bent pipes. Under the water cistern, and bolted to it, is another cistern divided by partitions, and in which is contained also some water, but not full. The gas in process of manufacture passes down the first pipe and escapes into the first division of the lower cistern ; it then ascends the second

pipe, passes round the bent connecting pipe, and down the third pipe, which empties itself into the second compartment of the lower cistern, and so on through so many pipes and compartments as may be found necessary. A series of such pipes may at one time be conducting the gas forward through the compartments and on to the purifiers. The condensed tar, ammoniacal liquors, &c., may be drawn off from the separate compartments.

Thirdly, relates to "attaching, fixing, and combining certain apparatus to an air vessel or vessels used for the purpose of buoying up a gasometer," whereby its buoyancy may be increased or decreased at pleasure, without the use of balance weights and chains, and a more equal pressure will be obtained upon the gas enclosed. Any suitable air vessel being applied to a gasometer for the above purpose, the Patentee proposes to allow water to flow into it at pleasure, by means of a valve, which is to be opened or shut by a screw rod passing down the inside of a pipe attached in an air-tight manner to the air vessel. If more air is required to be admitted, the water is stopped from entering, and the water already in the air vessel is drawn off by means of a syphon, a small air pipe being provided to introduce the air by.

[Printed, 2s. 5d. See Rolls Chapel Reports, 8th Report, p. 121.]

A.D. 1817, December 5.—N° 4184.

STRATTON, WILLIAM.—"Improvements on certain part or parts of gas apparatus."

These relate to the construction of "double gasometers," one being placed within the other; to the construction of a cistern or tank; and to the mode of balancing one gasometer by means of the other.

The tank is a narrow circular vessel, made of two concentric rings, with a bottom, and is filled with water. The outer gasometer is made twice the height of the tank, and the inner gasometer of the same height as the tank. When about to be filled with gas the outer gasometer is depressed till its bottom edge reaches the bottom of the circular tank, and the inner gasometer is elevated till it almost entirely fills the interior of that part of the outer gasometer which is above the tank. The gas is then introduced by means of a pipe between the gasometers, and as it flows it elevates the outer gasometer, and depresses the inner

one, giving thereby a large space for the storeage of gas between the two. The outer and inner gasometers may be attached to each other by siphon pipes, fitted with pistons and rods, so that as one is elevated the other will be depressed to a corresponding extent.

[Printed, 5d.]

A.D. 1817, December 19.—N^o 4188.

HOLDSWORTH, ARTHUR HOWE.—“Improvements on gasometers.” This invention consists, first, in an improved gasometer, wherein more gas may be stored than has formerly been the case. A circular partition or wall, of brick, iron, or other suitable material, may be built in the inside of the usual tank, leaving a space or narrow chamber of about a foot wide between the inner side of the original tank and the partition all round. This chamber should be water-tight, and filled with water; and in it the gasometer is suspended in the usual way, by chains. The interior of the tank may be void of water, but full of atmospheric air, which may be displaced by water at pleasure. In working this new gasometer, the interior tank is filled with water, the gas is then turned on in the usual way from the purificas, and the gasometer rises to its highest point. The water is then withdrawn from the tank causing the gasometer to descend in proportion. More gas may then be introduced, which will again elevate the gasometer to its highest point. Both tank and gasometer being now full they may be entirely emptied for the purpose of consumption, first by the natural descent of the gasometer, and secondly, by the introduction of water to fill the tank.

In some cases the Patentee proposes to use several small gasometers instead of one large one, with a self-acting valve, and suitable pipes to regulate the consecutive filling of each. He also applies a dial, worked by a ratchet movement, to measure the consumption of gas.

[Printed, 7d. See Rolls Chapel Reports, 8th Report, p. 122.]

A.D. 1818, January 15.—N^o 4199.

PALMER, GEORGE HOLWORTHY.—“A new mode of purifying certain descriptions of gases.”

“This process of purifying is applicable to all those inflammable gases which are obtained from the distillation of pit coal, coal

“ tar, or other substances capable of producing gas, similar in
 “ constitution to that obtained from pit coal, and capable of being
 “ applied for the purpose of illumination, and when the gas so
 “ obtained happens to be contaminated with sulphur. The gas
 “ may be made by any of the usual processes, and is to be con-
 “ veyed in pipes to a condenser or refrigeritory, to deprive it of its
 “ tar, ammonical liquor, and condensible ingredients ; from thence
 “ it is to be conveyed to one of my purifiers, which consists of a
 “ vessel of any form, and made of cast iron, or any other material
 “ which will stand the action of heat. This purifyer is to be kept
 “ moderately red-hot while in action, to accomplish which it may
 “ be set in the same furnace as the retorts, or heated by a separate
 “ fire (which will be governed by the nature and extent of the
 “ concern), so as to be visibly red by daylight. This purifying
 “ vessel is to be nearly filled with the fragments or refuse,
 “ clippings of sheet iron, tinned iron plates, or any oxid of iron,
 “ at a minimum of oxidation, such as common clay or argillaceous
 “ iron ore, or finery cinders, or black oxid of iron ; and when so
 “ filled and heated the gas must pass through it, which will effect
 “ a partial decomposition of the sulphuretted hydrogen, and will
 “ be completely effected by passing into a box or cistern of cold
 “ water. When one of the purifyers is thrown out of action it
 “ need not have its contents removed, but its doors must be left
 “ open to expose it suddenly to the action of the atmosphere, and
 “ as it is still kept red hot, it will before the [second] purifyer
 “ becomes saturated, be again competent to purify the gas.”

[Printed, 3d. See *Repertory of Arts*, vol. xxxiv. (*second series*), p. 196. Rolls
 Chapel Reports, 8th Report, p. 124.]

A.D. 1818, July 24.—Nº 4283.

CLEGG, SAMUEL.—“ An improved gazometer or gas-holder.”

“ This improved gazometer or gasholder, is made of thin metal
 “ plates, or other fit materials. It has two sides and two ends,
 “ meeting together at top in a ridge, like the roof of a house ; the
 “ said sides and ends are united together by hinges, and the joints
 “ are covered with some flexible material which will retain the
 “ gas but which will allow the sides to fold together, in the same
 “ manner as a portfolio or letter case folds or shuts up ; therefore
 “ the sides and ends of this gasholder can either be folded up flat
 “ and close together, or they can be opened out in the form of

" the roof of a building. The bottom edges of the sides and ends " are immersed in water, in order to retain the gas which is " introduced within the gasholder or gazometer. By opening out " or closing up of the sides and ends of the gasholder its internal " capacity is enlarged or diminished, according to the quantity of " gas it is required to contain; and this variation of the internal " capacity of the gazometer or gasholder is effected without " a deep pit or tank of water to immerse the whole gazometer, " as is required in the ordinary construction of rising and falling " gazometers." Suitable means are adopted by the Patentee for suspending the new gazometer, and counterpoising the weight of its sides.

[Printed, 10d. See *Repertory of Arts*, vol. xxxvii. (*second series*), p. 193
Rolls Chapel Reports, 8th Report, p. 132.]

A.D. 1818, December 10.—N° 4306.

GRAFTON, JOHN.—" Improved process or method of making " carburetted hydrogen gas for the purpose of illumination."

These improvements consist " in employing retorts lined or " cased with fire clay, which can be opened at both ends, and " which are placed in an inclined position for the convenience of " discharging the contents; also in employing a secondary retort " with feeding apparatus to receive the tar separated from the " gas produced by the first retort, and to introduce the tar into " the secondary retort, in order to be re-distilled into gas." The retorts in question may be made of iron or other metal with both ends open; these ends may be closed by lids luted with clay and screwed up in the usual way. The retort is placed in the furnace in an inclined position, and both ends are beyond the action of the fire; it is fed at the higher end and discharged at the lower one. The inside may be protected partially or wholly by a casing of clay, Stourbridge clay being preferred. The outer side of the retort may be also protected by a " flaunch" on each side cast the full length of the retort. To effect the second part of this invention, the Patentee causes a vessel to be attached to the under side of the " hydraulic pipe," into which the tar and oily matter subside. From thence it is drawn through a pipe and delivered in a regulated manner into a second retort heated to redness and previously filled with iron filings or coke or other substances known which will convert the tar and oil into gas.

[Printed, 9d. See *Repertory of Arts*, vol. xxxviii. (*second series*), p. 272.
Rolls Chapel Reports, 7th Report, p. 121.]

A.D. 1819, February 9.—N^o 4341.

SIMPSON, JAMES.—“Methods calculated to convey gas used “for illumination to the burners, and at the same time to sus-“pend the burners or the lamps, lustres, or other frames or “holders in which the burners are placed.”

This invention consists in substituting for plain tubes in conveying gas and suspending the burners, any arrangement of “links,” “tubes,” or “rings,” “the whole being an imitation of “a chain.” It is essential that a free passage for the gas be maintained.

[Printed, &c.]

A.D. 1819, March 23.—N^o 4351.

OUTHETT, JOHN.—“Improvements in the construction, ar-“rangement, and combination of the series of apparatus used “for the production of gas from pit coal and other substances, “and for purifying, storing, and delivering the same for the “purposes of illumination, and for the application of certain “parts of the said improved apparatus to other useful purposes.”

The improvement first described consists in placing a number of small retorts made of cast or wrought iron or other suitable material within a larger one. The outer large retort is heated by the furnace, and the inner smaller ones contain the coal. The coal is placed on trays or troughs within the small retorts. When the mouths of these retorts are closed and the necessary heat applied, the generated gas is caused to proceed to the further ends of the small retorts and return to the front again by the spaces between the small retorts and the inner periphery of the enclosing larger and highly heated retort. The small retorts may be quickly emptied and filled again by applying mechanical means to draw out the exhausted troughs and put them in again supplied with fresh coal. The desired effect arising from passing the generated gas over a hot surface may be effected in various manners, such as by having one retort divided by a partition into two, the gas being produced in one compartment and separately heated as it passes through the other; and the retorts may be of various shapes.

Secondly, this invention relates to “an horizontal condensing worm vessel,” by which the gas and water will be caused to move in opposite directions. The gas is caused to pass in a certain

direction through a series of pipes; these pipes may be in the form of a coil and be cast on or attached to a plate or bottom of a vessel. The water is caused to flow in the opposite direction along the spaces existing between the pipes. Each coil may be supplied with a suitable opening to allow of the exit of the tar or other condensed matter.

Thirdly, in the application to the vessel called the "lime vessel," "of a circular or spiral inclined plane, under which the gas is made to make its course for the purpose of purification."

Fourthly, consists in applying air vessels to gasometers to buoy them up, placing them in such a position below the centre of gravity that they will ballast the gasometer as well as regulate its pressure upon the gas.

Fifthly, consists in a mode of "stopping off," "regulating the delivery," or "preventing the escape" of gas. The mouth of the gas pipe is brought to the bottom of a vessel and carried up a sufficient number of inches; the bottom of the vessel is then filled to a sufficient depth with water or other fluid. The exit pipe for the gas branches off from the side of the vessel. When it is desired to stop the gas, a leather diaphram or clack is first screwed down upon the mouth of the pipe by which the gas entered; then a cap or extinguisher is screwed down over the entrance pipe till it enters the water or other liquid to a sufficient depth to prevent the gas passing round.

The sixth part of this invention relates to the application of the Patentee's "horizontal worm vessel to the purpose of refrigerating or cooling other fluids or liquids."

[Printed, 2s. 10d. See Rolls Chapei Reports. 8th Report, p. 130.]

A.D. 1819, May 4.—N^o 4365.

HADDOCK, URIAH.—"An improved method of producing inflammable gas from pit coal."

"In the first place, charge the retort with a quantity of pit coal proportioned to the size thereof, and then add thereto one-eighth part, by weight, of well burnt fresh lime, baryta, strontia, or any other alkaline earth or substance having a strong affinity for sulphur, such substance being first perfectly freed from carbonic acid, but I prefer lime, as being the cheapest, and, in my opinion, best adapted to the purpose. I next cause the products emitted from the retort to pass [immediately] through a red-hot

“ cylinder, or other shaped vessel filled with well burnt fresh lime
 “ [or any other alkaline earth] free from carbonic acid, or with
 “ any other substance or substances free from carbonic acid,
 “ oxygen, ammonia, or sulphur, and not possessing the property
 “ of giving an injurious quality to carburetted hydrogen gas. I
 “ introduce such lime or other substance or substances to check
 “ the too rapid progress of the volatile ingredients emitted from the
 “ retort, in order that any yet undecomposed petroleum may be
 “ converted into carburetted hydrogen.” “ I then cause the gas
 “ to be passed through a washer of water, acidulated with sul-
 “ phuric acid, or any acidulated water capable of fixing ammonia.

[Printed, 3d. See *Repertory of Arts*, vol. xxxvii. (*second series*), p. 332.]

A.D. 1819, June 19.—Nº 4381.

GORDON, DAVID, and HEARD, EDWARD.—“ A portable gas lamp.” This invention relates to a gas lamp or vessel made of sufficient strength to admit of gas being pumped into it under pressure. The vessel may be of any suitable shape and dimensions and composed of suitable materials; when in use it may be placed in any convenient position, such as in another room, in a coach, on board ship, &c. The stop-cock on the exit pipe is worked with caution by means of an endless screw working into a ratchet wheel on the end of the key of the cock. The opening in the cock is also, for the same purpose, made of the V shape; or the flow of gas may be regulated by a valve actuated by a screw, or by other means. While the vessel is being charged with gas it is proper to keep both the pump and vessel cool by means of water.

[Printed, 6d. See *Repertory of Arts*, vol. xxxvi. (*second series*), p. 339. *London Journal (Newton's)*, vol. i., p. 95. *Engineers' and Mechanics' Encyclo-pædia*, vol. ii., p. 32.]

A.D. 1819, November 1.—Nº 4405.

GUNDRY, ISRAEL; NEAVE, EDWARD; and NEAVE, JOSIAH.
 —“ An application of various gases or vapours to certain useful
 “ purposes.”

This invention consists, first, “in the working of a piston or
 “ pistons in a barrel or barrels by means of factitious gases,
 “ either pure or mixed with vapours of various kinds, and by
 “ which a mechanical first mover or power is produced capable
 “ of driving wheels or other machinery.”

" Second, in the forcing of water or any other liquid by means of such gases pressing thereon by their elastic power."

The use of gas derived from the distillation of coal or oil in closed vessels is preferred for the above purposes. The gas being generated under pressure may be caused to move an engine after the manner of a steam engine; or its expansive power may be employed to displace and elevate water from a vessel to a higher level. Gas so employed may be caused to pass into a gasometer to be subsequently used for the purpose of illumination, &c.

[Printed, 11d.]

A.D. 1819, November 18.—Nº 4409.

GRAFTON, JOHN.—“A new and improved apparatus for purifying gas used for illumination.”

The improvement first described consists in “preparing or compounding the lime which is used for purifying the gas with pot or pearl ashes, and charcoal or coke may be added.” The lime may be slackened with strong potash liquor in sufficient quantity to make the lime fall into powder; to this may be added in suitable quantities dry pot ashes, also wood charcoal or coal coke. “This compound of lime and alkali, either with or without charcoal or coke, I call my purifying material.”

The second part of this invention consists in certain additions to the apparatus used in purifying gas. The material used for purifying the gas is spread in an even layer on a web of wire cloth. This wire cloth is situated in a long box or vessel in an horizontal plane, and in such a manner that it will divide the vessel into two compartments; small partitions are placed above and below the web, so that the gas in progressing from one end of this purifying vessel to the other has to ascend and percolate through the stratum of lime and potash, and descend again through it several times. The wire web may be fitted up like an endless band revolving round a roller placed at each end of the vessel. Fresh purifying material may be introduced by means of a hopper placed at that end of the vessel where the gas leaves it, and the impure material may be removed by winding forward the web, which will cause it to drop into a receptacle placed at the other end. Revolving brushes may be applied to the web on its return to open and clean the interstices.

[Printed, 9d. See London Journal (*Newton's*), vol. i., p. 81. Rolls Chapel Reports, 7th Report, p. 122.]

A.D. 1820, May 11.—N^o 4458.

MALAM, JOHN.—“Improvements in gas metres.”

These relate to three modifications of apparatus for measuring the flow of gas, and consist,—

First, of an outer box or case made in preference of tinned iron, in which is contained an inner case resembling somewhat a bellows. The gas is caused to enter the inner case or bellows, and to proceed through an opening in the top of the inner case into the outer case, and from thence by a pipe to the burners. The opening is more or less opened by the elevation of the top of the inner case, which is effected by the pressure of the gas, and the flow of gas is increased by the size of the opening; attached to the top of the inner box are rods and levers to secure the proper direction of the force. Above the outer box is placed any suitable clock work or maintaining power which will actuate an excentric wheel in a regulated manner; this excentric wheel elevates the end of a lever and allows it to be depressed at each revolution, and at the other end is a spring pall and ratchet wheel which is in connexion with the registering apparatus. At each revolution of the excentric wheel the registering apparatus is moved round a regulated distance; but this distance is effected and controlled, or in other words the length of the stroke of the lever is regulated, by the height of the top of the inner case, which elevates or depresses it through means of the rods and levers referred to. The greater therefore the opening on the top of the inner case the lower will the lever be depressed, and the longer will be the stroke. The registering depends therefore on the width of the opening.

Second, consists in substituting for the moveable or upper side of the inner case or bellows above referred to, a vessel suspended in a water joint which will rise and fall according to the pressure of the gas within; and in substituting for the maintaining power above referred to, a machine of the Patentee’s “own invention, “ which has hitherto been used as a gas meter, and described and “published as such in the 37th vol. of the transactions of the “society instituted in London for the encouragement of arts,” &c., and elsewhere.

Third, consists in substituting for the opening on the top of the inner case or bellows (for the flow of the gas) an apparatus resembling a stopcock, which is opened and shut more or less by the elevation and depression of the lid of the case. The maintaining

power in this case may be a circular vessel containing a number of bellows, which are filled in succession by the gas, and thereby cause the internal frame to which they are attached to revolve.

[Printed, 1s. 6d. See London Journal (*Newton's*), vol. ii., p. 81.]

A.D. 1820, July 11.—Nº 4483.

GRAFTON, JOHN.—“New and improved methods of distilling “ off the products of coal, and carbonizing coal in the process of “ making gas for the purpose of illumination.”

These improvements consist in an “improved manner of constructing the vessels or retorts used for carbonizing coal to produce gas for the purpose of illuminations. I construct the vessel or retort of a material known by the name of the Stourbridge fire-brick clay, or any other good description of fire-clay which may be found to resist the action of the fire sufficiently, without vitrifying or cracking, which material has been heretofore tried for retorts, but generally failed in consequence of those retorts having been made in one entire piece, which caused them to break in pieces very shortly after the fire was applied.” “I cause the retort to be made of fire-clay and composed of several pieces, which may be put together by any proper cementing substance or mortar, such as the fire-clay made wet, or other material which will not drop out or be destroyed when exposed to the heat.” The Patentee shows various modes which may be adopted for joining the pieces together, and for holding them tight together. The part immediately over the fire may be protected by a piece of burnt clay.

[Printed, 9d. See Repertory of Arts, vol. xliv. (*second series*), p. 324. London Journal (*Newton's*), vol. i., p. 330. Rolls Chapel Reports, 7th Report , p. 122.]

A.D. 1820, December 9.—Nº 4516.

MOORE, JOHN.—“A certain machine or machinery, or apparatus, which may be worked by steam, by water, or by gas, as a moving power.”

This invention consists in improvements on a rotary engine to be driven by steam (see Abridgments on Steam Engines). Water may be made to act as the motive power, or the expansive power of gas may be employed for that purpose.

[Printed, 9d.]

A.D. 1821, September 8.—N° 4587.

GIBBINS, BEVINGTON, and WILKINSON, CHARLES HUNNINGS "An improved retort or vessel for making coal and other gas, and for the distillation, evaporation, and concentration of acids and other substances."

This invention consists in "a metallic retort for the purposes of distillation, evaporation, concentration, or decomposition, so constructed that in one case herein-after described, it will resist the action of acids or other substances upon it, and in the other case herein-after also described, that an extension of surface is produced which greatly promotes decomposition. The first improvement consists in lining the [ordinary] metallic retort with Stourbridge bricks or clay, or such other like substances as will resist the action of acids [or other substances]; and the second improvement consists in introducing shelves into the retort; these shelves may be adjusted to any shaped retort."

[Printed, 5d. See London Journal (*Newton's*), vol. iii., p. 19.]

A.D. 1823, May 10.—N° 4790.

CASLON, WILLIAM, the younger.—"Improvements in the construction of gasometers."

By this invention gasometers may be made of "light materials," with "flexible sides," so as to dispense with "water" and with the "tank" in their operation. A fixed framing of wood, square, oblong, or other form is erected within a slight building used for protection. The lower half of this framing, and also its bottom, is lined inside with cloth or other material rendered air-tight; the upper half of the framing is also lined in a similar manner, but in this case it is not attached to the framing except at the centre. The upper edges of this upper lining are attached in an air-tight manner to another frame or plunger, which fits easily into the inside of the first frame, and may be worked up and down readily, being counterpoised by weights. As the gasometer empties itself the plunger descends to the bottom, carrying with it the flexible lining, which passes between the plunger and the outer framing, the action somewhat resembling that of a bellows. On again admitting gas, the plunger reverses its movement and rises to the top.

[Printed, 6d. See London Journal (*Newton's*), vol. vii., p. 21.]

A.D. 1823, June 30.—N° 4808.

VERE, WILLIAM, and CRANE, HENRY SAMUEL.—“Improvements in the manufacture of inflammable gas.”

This invention consists “entirely in the application or admission of a continued stream of water, or of a continued current of steam produced by the evaporation of water into the retort or other vessel where coal, coal tar, tar oil, animal oil, vegetable oil, or other suitable material is under the process of decomposition, for the purpose of producing inflammable gas, by which means the impurities which rise with the gas, and that would otherwise choke up the passages or pipes from the retort to the gasometer, or cause the gas to smoke when in combustion, are precipitated and deposited upon the retort or upon the decomposing material contained in it, and consequently the process can be continued without any interruption or inconvenience being experienced from the stoppage of the pipes.”

[Printed, 7d. See London Journal (*Newton's*), vol. vii., p. 175. Register of Arts and Sciences, vol. iii., p. 178. Engineers' and Mechanics' Encyclo-pædia, vol. i., p. 596.]

A.D. 1823, August 14.—N° 4830.

JENNINGS, HENRY CONSTANTINE.—“An instrument or machine for preventing the improper escape of gas, and the danger and nuisance consequent thereon.”

The instrument referred to consists in apparatus for introducing into the pipe of the burner a ball or sphere which, when laying on its bed, forms an air-tight joint, but when elevated, allows of the flow of gas. The elevation is effected by a thin compound plate of brass and steel, which is attached to the ball, and which when heated becomes bent, and thereby lifts the ball from off its bed. The reverse movement takes place when the plate becomes cool.

[Printed, 6d. See London Journal (*Newton's*), vol. ix., p. 183. Mechanics' Magazine, vol. iii., p. 408.]

A.D. 1823, August 18.—N° 4832.

MALAM, JOHN.—“A new mode of applying certain materials hitherto unused for that purpose to the constructing of retorts, and improvements in other parts of gas apparatus.”

The materials which the Patentee proposes to use for making "retorts" consist of a mixture of "pulverized fire stone (such as may be found in the neighbourhood of the Shorncliff iron works, near Sheffield)," "red lead," "bullocks' blood," and "ordinary fire-clay." These are properly incorporated in suitable quantities and rendered fit for moulding. The retort is moulded in its place over the furnace, and may be of any shape and in one piece, as this mixture is not liable to crack. To save coals, it is proposed to do away with grate bars in the furnace, and to supply it with eight hours consumption of coal at one firing.

The improvements in gas apparatus referred to consist, first, in arranging three or more purifiers in a circular or other relative position, the purifying material being placed on trays in the interior, through which the gas will percolate. A water-tight sliding or shifting valve is interposed between the retorts and the purifiers whereby the impure gas may be turned into any desired course in passing through them, that is to say, the gas in preference is caused to pass first through the purifier most soiled, then through the next in point of impurity, and so on to the most clean. The Patentee proposes to have an extra purifier, which may be emptied and replenished with fresh purifying material, and be held ready to replace the most impure one when required. Piping is adjusted in a suitable manner to convey the gas in the directions required. These purifiers may be arranged so that they will form one compact apparatus on a smaller scale.

The improvements on "gasometers" consist, "first, in suspending the gasometer by means of chains passing over pulleys supported from three or more columns erected near the edge of the tank, to the other end of which chains are attached balance weights." In order to prevent the gasometer from rising or falling unequally three or more perpendicular racks are placed attached to the above columns; into each of these racks works a pinion, the shafts of which proceed to one centre, where they are connected one with the other by bevel gearing. If one side of the gasometer has a tendency to become depressed, the motion of the pinion in the rack on that side reacts through the other shafts and pinions, thereby restoring the equilibrium.

[Printed, 1s. 4d. See *Repertory of Arts*, vol. ii. (*third series*), p. 54. London Journal (*Newton's*) vol. ix., p. 57.]

A.D. 1824, January 19.—N^o 4893.

BROADMEADOW, SIMEON.—“ Manufacturing and purifying “ inflammable gases by the admission and admixture of atmo- “ spheric air.”

This invention consists in “ exhausting or drawing the gas, “ either directly or indirectly, from the retort, oven, or other “ apparatus where the gas is generated, by means of an air- “ exhausting apparatus, (the exhauster of which may either be in “ the form that is usually called a pair of bellows, or in the form “ of what is usually called an air-pump, or any other convenient “ form of air exhauster), placed between the retort, oven, or other “ gas generator and the gasometer, and effect of which is to draw “ the gas from the retort, oven, or other gas generator, without “ the waste usually incurred by the escape of gas. Also in the “ introduction of a certain portion of atmospheric air,” [say one-eighth part of the gas,] “ into the gasometer by means of the said “ exhausting apparatus, when the gasometer shall have been “ partly filled with gas. The air introduced will purify the gas “ and enable those adopting the same to make use of the ovens “ herein-before described, or of retorts, of a strength much inferior “ to those now used, and in fact of a greater variety of gas “ generators than has hitherto been adapted to this purpose, since “ the exhaustion, which is effected, precludes the necessity of “ making the retorts air-tight or hermetically sealing them as “ heretofore.”

[Printed, 5d. See *Repertory of Arts*, vol. i. (*third series*), p. 420. London Journal (*Newton's*), vol. viii., p. 76.]

A.D. 1824, March 22.—N^o 4929.

DUMENY, CHARLES.—(A communication.)—“ An apparatus “ containing within itself the means of producing gas from oil, “ and other oleaginous substances, of burning such gas for the “ purpose of affording light, and of replacing the gas consumed.”

[No Specification enrolled.]

A.D. 1824, April 14.—N^o 4940.

GORDON, DAVID.—“ Improvements in the construction of “ portable gas lamps, and which improvements are applicable to “ other apparatus for facilitating the use of compressed gas.”

These improvements relate to the stopcocks used in connection with such apparatus, and consist in the application of screw plugs of various forms, for closing and opening the aperture for the flow of the gas; and also in the application of soft metal rings or collars (lead, for example,) to form air or gas-tight joints.

[Printed, 6d. See *Repertory of Arts*, vol. i. (*third series*), p. 297. *London Journal (Newton's)*, vol. x., p. 136. *Register of Arts and Sciences*, vol. i., pages 2, 35, and 67.]

A.D. 1824, May 15.—N^o 4954.

IBBETSON, JOHN HOLT.—“ Improvements in the production “ or manufacture of gas.” These improvements consist, first, in so constructing a furnace that the draft will be admitted above the ignited coals, by an aperture provided for the purpose, and proceeding downwards through the coals, and between the fire bars into the place usually represented by the ashpit, finds its way into the flues, and thence to the chimney. Secondly, in placing a fire-place so constructed that it will be in the interior of a retort or “ decomposing chamber,” and thereby give an effective radiation from its surface and from both sides. Thirdly, in constructing a decomposing chamber, made of any suitable material, so that it will enclose such a fire-place, and admit of the flues from the fire being carried round its outer sides. Fourthly, in admitting “steam” into the decomposing chamber, when in operation, among the ignited coal or coke, alone or mixed with tar or oil. “The solution “ [consumption] of the coak will always be in proportion to the “ quantity of steam passed through it.”

[Printed, 6d. See *Repertory of Arts*, vol. v. (*third series*), p. 335. *London Journal (Newton's)*, vol. ix., p. 69. *Register of Arts and Sciences*, vol. ii., (*new series*), p. 85. *Engineers' and Mechanics' Encyclopædia*, vol. i., p. 594.]

A.D. 1824, June 15.—N^o 4975.

TAYLOR, PHILIP.—“ Improvements in apparatus for producing gas from various substances.” The Patentee causes the hot vapour of the substance operated upon to pass through “ a filter of red hot matter suitable for the purpose, by which “ operation the vapour is converted into gas, and the grosser par-“ ticles arrested in the interstices of the filter.” This may be effected by passing down the pipe for supplying the oil, tar, &c., to nearly the bottom of a retort placed in a vertical position.

The oil, &c. escaping at that point which is the hottest, is converted into vapour, and then in percolating upwards towards the discharge pipe through the red hot fragments of "brick, coke, "cinder, charcoal, metal, or stone," which fill the retort, it is there converted into gas. If once "filtering" of the vapour through the hot materials be insufficient to produce the gas, it may be passed through a second heated retort containing similar hot materials.

[Printed, 6d. See *Repertory of Arts*, vol. vi. (*third series*), p. 5. London Journal (*Newton's*), vol. x., p. 231. Register of Arts and Sciences, vol. iii., p. 137. Engineers' and Mechanics' Encyclopaedia, vol. i., p. 595.]

A.D. 1824. June 15.—Nº 4977.

BAILEY, WILLIAM.—"Gas consumer, for the more effectually consuming the smoke arising from gas burners or lamps."

This invention relates to an apparatus suspended over the gas burner or lamp, to catch or condense the smoke arising, and prevent its reaching and soiling the ceiling. The apparatus may consist of a hollow cone with a hollow ball on the top of the cone, both made of some material which will not readily crack, and ornamented outside according to taste. The inside of the cone being platinized and bright will reflect the rays of light downwards.

[Printed, 6d. See London Journal (*Newton's*), vol. ix., p. 250.]

A.D. 1824, June 22.—Nº 4978.

HOBBINS, JOHN.—Improvements in gas apparatus.

These relate, first, to a novel construction of retort, and consist in making the mouth-piece at each end of a separate piece from the body of the retort which is alone exposed to the action of the fire, and thereby becomes the only part that will want renewing; also in the addition to one of the mouth-pieces of an opening, which may be closed by a door or valve, whereby the retort may be supplied with fresh coals without requiring to open the door, and in the addition to the other mouth-piece of a corresponding opening to allow of the exit of the coke; also in the introduction into the retort of a rake and rod at each end through holes in the doors, one of which is for the purpose of discharging the coke, and the other for equalising and spreading the fresh coal.

Second, to an apparatus for purifying gas, which may consist of a circular vessel of the required dimensions divided into

several circular compartments by means of circular or ring divisions. Into these compartments is put the purifying liquid. There is then inverted over this divided vessel a corresponding divided vessel, or a series of vessels the one over the other. The gas is introduced into the centre compartment by a pipe and passes off from the outer compartment, and in its progress has to pass up and down, over the edges of the under divisions and under the edges of the inverted vessels, each time bubbling through the purifying liquid. Or the purifying apparatus may be arranged after the manner of Wolfe's bottles, the gas being caused to pass by means of a pipe from the top of one vessel to a point under the surface of the purifying liquid in the next vessel, and so on.

[Printed, 7d. See *Repertory of Arts*, vol. ii. (*third series*), p. 434. *London Journal (Newton's)*, vol. ix., p. 410. *Register of Arts and Sciences*, vol. iii., p. 153. *Engineers' and Mechanics' Encyclopædia*, vol. i., p. 590.]

A.D. 1824, July 1.—N^o 4982.

PONTIFEX, WILLIAM, the younger.—“ New or improved modes of adjusting or equalizing the pressure of fluids or liquids in pipes or tubes, and also an improved mode of measuring the said fluids or liquids.” This invention relates, first, to an apparatus for equalizing the pressure of gaseous fluids in their passage from the mains to the burners, and consists in causing the main to communicate by means of a pipe with the interior of an inverted vessel, the lower edges of which are immersed in a suitable fluid forming a lute. The weight of the inverted vessel is counterpoised by chains, a lever and weight. Connected to the inverted vessel by means of a rod bent at the lower end is a sliding sluice or valve fitting into the main. According to the pressure of gas in the main the inverted vessel is elevated or depressed, and in so doing elevates or depresses the sliding valve, and more or less closes the thoroughfare through the main, and shuts off the gas more or less from the burners as required. The whole is protected by an outer casing which communicates with the atmosphere by means of an open pipe.

Second, relates to a modification of the above apparatus for adjusting and equalizing the pressure of fluids (water) in pipes.

Third, relates to an apparatus for measuring gaseous fluids by means of gasometers, having reciprocating motion; and may consist of two inverted vessels or gasometers suspended by chains

from the opposite ends of an oscillating lever. The lower edges or mouths of the inverted vessels are immersed in a suitable liquid to form a lute, and the whole apparatus is inclosed in an air-tight box or exterior case provided with an exit pipe proceeding to the burners. Each of the inverted vessels is provided with an entrance pipe for the gas, the mouths of which rise in each case into the interior of the vessel, and to some height above the level of the liquid within them ; and the mouth of each pipe is provided with a valve. Each vessel is also provided with an exit pipe, the mouths of which, fitted with valves, are situated also above the level of the fluid, their lower ends opening into the exterior casing. In working this apparatus the gas is caused to flow into one of the gasometers, which filling and rising operates when full by means of an adjustable catch fixed on a rod attached to the gasometer upon an oscillating lever weighted with mercury or by other means, which at the adjusted point tumbles over with such force as to cause instantaneously the inlet valve to close and the outlet valve to open. At the same moment the reverse action has taken place in the other gasometer effected by similar means when it had become empty, and descended to the bottom of its stroke. By this means the flow of gas becomes continuous ; first, into one gasometer and then into the other, so long as any consumption of gas is taking place. The capacity of the gasometers being known, the measure of the flow of gas may be registered by suitable apparatus.

[Printed, 10d.]

A.D. 1824, December 14.—N^o 5054.

CONGREVE, Sir WILLIAM.—"An improved gas meter." The Patentee proposes to measure and register the flow of gas through a pipe or cock where the pressure is uniform, by registering the length of time the pipe or cock is open. For this purpose he applies to each cock or pipe a small clock movement, which will be started by the opening of the cock, and stopped again by closing it. The dial attached will indicate any number of hours the clock may have gone. This mode of measuring may be applied to water pipes, &c.

[Printed, 4d. See London Journal (*Newton's*), vol. xii., p. 29.]

A.D. 1825, February 1.—Nº 5089.

CROSLEY, SAMUEL.—“An improvement in the construction of “gas regulators or governors.” The object of this invention is to preserve an uniform pressure of gas during its discharge through any opening or burner, and which may be effected as follows:—A vessel of suitable dimensions and form is provided with a diaphragm made of flexible air-tight material; the vessel has an opening in the bottom, to which a box and pipe are attached for the admission of the gas under the diaphragm, and another opening in the side for the exit of the gas on its way to the burner. From the centre of the diaphragm is suspended a rod, the lower end of which passing through the hole in the bottom of the vessel carries a plug or valve. When the pressure of gas increases beyond the required and regulated degree the diaphragm will be elevated, which will raise the rod and plug, close or partially close the opening, and thereby limit the supply of gas till the proper equilibrium is restored.

[Printed 5d. See *Repertory of Arts*, vol. i. (*third series*), p. 273; also *vol. viii. (new series)*, p. 275. *London Journal (Newton's)*, vol. x., p. 285 *Register of Arts and Sciences*, vol. iii., p. 158.]

A.D. 1825, February 26.—Nº 5109

WHITEHOUSE, CORNELIUS.—“Certain improvements in “manufacturing tubes for gas and other purposes.”

These “improvements in manufacturing tubes for gas and other purposes consist in heating the iron of which such tubes are made in a blast furnace, and immediately after withdrawing them from the furnace, passing them through swages or other such like instruments, in manner following:—I prepare a piece of flat iron, commonly called plough-plate iron, of a suitable substance and width, according to the intended calibre of the tube. This piece of flat iron plate is prepared for welding by being bent up on the sides, or, as it is commonly called, turned over, the edges meeting or nearly so, and the piece assuming the form of a long cylindrical tube; this tube is then put into a hollow fire heated by a blast, and when the iron is upon the point of fusion, it is to be drawn out of the furnace by means of a chain attached to a draw-bench, and passed through a pair of dies of the size required, by which means the edges of the iron will become welded together. A pair of pincers may be

" employed instead, having a hole for the tube to pass through
" similar to the dies."

A.D. 1830, January 13.—Notice is given of the assignment of this invention for certain considerations to James Russell.

[Printed, 6d. See *Repertory of Arts*, vol i. (*new series*), pages, 97, 164, 166, and 234; vol. iii. (*new series*), p. 17; and vol. xvi. (*third series*), pages 59 and 116. *London Journal (Newton's)*, vol x., p. 254; vol. iv. (*conjoined series*), p. 145; and vol. xxv. (*conjoined series*), p. 44. *Mechanics' Magazine*, vol. xxx., p. 235; vol. xxxvi., p. 365; vol. xl., p. 445; and vol. xli., p. 352. *Register of Arts and Sciences*, vol. iii., p. 150. *Engineers' and Mechanics' Encyclopædia*, vol. ii., p. 301. *Patent Journal*, vol. ii., p. 629. *Webster's Report*, vol. i., pages 455, 457, 459, 463, 465, 471, 472, and 473; also 649 (*note m*). *Webster's Patent Law*, p. 48; also p. 136, case 114, and p. 140, case 164. *Carpmael's Reports on Patent Cases*, vol. i., pages 531, 532, 534, 557, 562, 563, 564, 569, and 588. *Dowling and Lowndes' Reports*, vol. i., p. 347. *Crompton, Meeson, and Roscoe's Reports*, vol. i., p. 864. *Moore's Privy Council Cases*, vol. ii., p. 496. *Meeson and Welsby's Reports*, vol. xi., p. 647; vol. xiv., p. 574; and vol. xvi., p. 633. *Clark and Finnelly's House of Lords Reports*, vol. i. (*new series*), p. 687.]

A.D. 1825, March 22.—Nº 5131.

HICKS, ROBERT.—“An improved bath.” This invention consists “in heating water in baths by means of burning spirits of “ turpentine, or carburetted hydrogen gas, in chambers in baths, in “ tubes passing through or under them.” When gas is employed the use of “Gordon's lamp,” with an extended burner passing into the chamber or tube, is preferred.

[Printed, 5d.]

A.D. 1825, March 25.—Nº 5133.

WITTY, RICHARD.—“An improvement in the method of lighting “ by gas by reducing the expense thereof.”

This consists in placing over any ordinary gas burner, and in the ordinary manner, a glass chimney of such a shape which shall cause the upper part of the chimney to be about three quarters of an inch less in diameter than the lower part of it, in chimnies whose length shall be about eight inches and a half, and whose largest diameter shall be about one inch and a half.

[Printed, 5d. See *London Journal (Newton's)*, vol. xiii., p. 23.]

A.D. 1825, April 2.—Nº 5146.

BROADMEADOW, SIMEON.—“An apparatus for exhausting, “ condensing, or propelling air, smoke, gas, or other airiform “ products.”

This invention consists, first, in causing by means of suitable power two gasometers suspended, one at each end of a beam or

lever, to ascend and descend alternately in suitable tanks containing water. The interior of each gasometer is provided with an inlet and an outlet pipe, the mouths of which open above the lead of the water in the tanks. The inlet pipes are provided with valves which open inwardly, and the outlet pipes with valves which open in the reverse direction. When the gasometer are set in motion, the gas is alternately drawn in till the gasometers become filled, and then expelled through the exit pipes. Second, one gasometer only may be used, and in this case the gasometer is elevated by means of a suspended weight, and may be depressed by its own weight, the suspended weight being removed for the time. Thirdly, one gasometer working in water as before may be enclosed in an air-tight casing, and an upward and downward motion imparted to it by means of a rod passing through a stuffing box in the lid of the outer case, and connected to suitable moving power. In this case the gas, &c., to be propelled is introduced by suitable pipes provided with proper valves into the outer closed case above the gasometer, as well as separately into the interior, by which means a double acting pumping and propelling result is obtained.

[Printed, 7d.]

A.D. 1825, April 20.—N° 5152.

OGILVY, CHARLES.—“An improved apparatus for storing gas.” This consists of “an apparatus constituted of a vessel [a wrought iron spherical shaped vessel is preferred] filled with charcoal, “with an air stop-cock, for the purpose of storing such gas or “gases as are commonly called and known as atmospheric air, “oxygen, nitrogen, hydrogen, carbonic oxide, carbonic acid gas, “and the inflammable gas, and gas mixed as well as pure, known “as applicable to various purposes of illumination.” The storing vessel full of masses of charcoal on being first used may be exhausted by an air pump before the gas is admitted, and in some cases before receiving a renewed supply of gas it is advisable to heat the apparatus in an oven up to 350° F.

[Printed, 3d. See *Repertory of Arts*, vol. iv. (*third series*), p. 324. *London Journal (Newton's)*, vol. xi., p. 93.]

A.D. 1825, May 14.—N° 5164.

GRAVIER, JEAN FRANCOIS.—“A certain method or methods “of regulating the emission or flow of gas from portable reser-“voirs, and of encreasing the safety or security of such reservoirs.”

[No Specification enrolled.]

A.D. 1825, May 14.—Nº 5173.

MACKINTOSH, CHARLES.—“A new process for making steel.”
“ By this invention every kind of metallic iron may be converted
“ into steel. The gases or vapours suitable for this purpose may
“ be those obtained by the well-known means of producing gas
“ by the distillation or decomposition of pit coal, oil, or such other
“ substances, whether of a mineral, vegetable, or animal kind, as
“ are capable of affording carburetted hydrogen in its various
“ forms ; and consists in bringing such gases or vapours in contact
“ with malleable iron at a high temperature, and which may be
“ accomplished by the means hereafter specified, as employed in
“ preference. The tubes, pots, or chests, or whatever other kinds
“ of vessels may be used for containing the iron to be converted
“ into steel, may be of any convenient form, but must be com-
“ posed of such materials as are capable of enduring an elevated
“ temperature, and yet remain almost or altogether air-tight. Let
“ a ‘suitable’ vessel or vessels be placed in a suitable furnace ;
“ and, having introduced the necessary quantity of iron, shut the
“ opening made use of ; for this purpose a fire being applied, the
“ temperature of the vessel is to be raised to a bright white heat.
“ Convey through a proper aperture or apertures in the said vessel
“ a portion of gas or vapour, or such substances as are resolvable
“ into the gases or vapours before specified, and let this be con-
“ tinued, taking care to provide for the escape of such portion of
“ the gas or vapour as shall already have served its purpose. The
“ temperature of the vessel, and an uniform supply of the materials
“ being kept up, the iron will in time be converted into steel.”

[Printed, 3d. See London Journal (*Newton's*), vol. xiii., p. 138. Register of
Arts and Sciences, vol. iv., p. 502. Engineers' and Mechanics' Encyclo-
pædia, vol. i., p. 787.]

A.D. 1825, May 31.—Nº 5178.

LEDSAM, JOSEPH FREDERIC, and COOK, BENJAMIN.—“Im-
“ provements in the production and purification of coal gas.”
These improvements are as follows :—“First, stratify or mix
“ with coal in the retort a suitable portion of common salt, or the
“ refuse of salt taken from the bottoms of salt pans.”
“ Secondly, pass the coal gas (so generated, or as produced by
“ any of the methods at present in use) through several strata or
“ layers of salt in a dry state.”

" Thirdly, force the gas into and through a solution of salt in water."

" Fourthly, force the gas into and through a solution of silver, copper, zinc, iron, or other metal, in nitrous or other acid."

" Fifthly, combine together two or more of the above processes."

[Printed, 3d. See *Repertory of Arts*, vol. ii. (*third series*), p. 138. *London Journal (Newton's)*, vol. xi., p. 266. *Register of Arts and Sciences*, vol. iv., p. 16.]

A.D. 1825, December 6th.—N° 5306.

LUSCOMBE, EDMUND.—" A method of manufacturing or preparing an oil or oils extracted from certain vegetable substances, and the application thereof to gaslight and other purposes."

This invention consists, first, in extracting oil from resin and similar substances by means of distillation and condensation.

Second, relates to the application of such oils for the purpose of "manufacturing gas," and consists of an apparatus containing a closed vessel to hold the oil provided with a pipe to conduct the oil to the retort, a pipe proceeding from the retort terminating in a worm condenser, a receptacle for condensed vapours, a pipe leading from thence to a gas-holding vessel, and lastly, a pipe leading from the gas-holding vessel to the original oil vessel. By this means the whole is in communication, and being capable of being closed admits of any desired pressure being put upon the gas while in process of production. To the gas holder may be adapted suitable recipients for gas, which when filled with gas at the desired pressure, may be detached for use. In preference the oil used may be previously saturated with carbonate of soda.

Thirdly, relates to the application of such oils to painting and other purposes.

[Printed, 8d.]

A.D. 1827, February 1.—N° 5454.

DANIELL, JOHN FREDERICK.—" Improvements in the manufacture of gas."

These improvements are in the process of "manufacturing gas from resin, tar, coal tar, pitch, turpentine, or any other resinous or bituminous substance, except coal, by preventing the volatile oils or spirits which arise with the gas in a heated retort

" from returning after their condensation into the said retort, " whereby the choking or obstruction of the retort or pipes " therewith immediately connected is prevented, and the volatile " oils or spirits are preserved for the solution of the resinous or " bituminous substances. This purpose may be effected by " causing the leading pipe along which the gas must pass from " the retort into the hydraulic main or condenser to proceed " downwards from the bottom of the retort or mouthpiece, or if " the leading pipe opens from the top, sides, or ends of the " retort, by bending or turning it downwards as close as possible " to its exit from the retort or mouthpiece into an hydraulic " main or condenser, conveniently placed to receive the con- " densed spirits or oils." The Patentee also proposes to introduce into the further end of the retort a half circular plate or diaphragm to keep back the thick and carbonaceous matter from getting into the pipes. The resin or other material used may be dissolved in turpentine or other volatile oil or spirit, and if the retort be not heated above a "cherry red heat," this oil or spirit may be recovered without waste in the condenser, and be used over again for dissolving more resin.

[Printed, 7d. See London Journal (*Newton's*) vol. ii. (second series),
p. 319.]

A.D. 1827, February 20.—N° 5465.

NICHOLSON, WILLIAM, and COLES, CHARLES BARNWELL.
—“A new method of constructing gasometers or machines or “apparatus for holding and distributing gas for the purpose of “illumination.” The mode first described of making a gasometer, consists of a cubical case made of sheet iron, wood, or any other material capable of being rendered air-tight. Within this vessel is a diaphragm resembling a piston made of any suitable material; to the edges of the diaphragm are attached the edges of a cloth, rendered air tight by means of a solution of caoutchouc or other varnish, and fitting, or nearly so, the cubical case; the under edges of the circular cloth are attached to the cubical case about half-way down, and thereby forming a kind of bellows. Between the case and the cloth are placed rings or rollers, as weights; when the diaphragm is descending by the drawing off the gas, the rings or weights carry the oil cloth down in a folded and regular manner, so that the diaphragm and rings will ultimately reach the bottom, and the gasometer be empty of gas. When inflation begins, the

diaphragm is elevated, taking up with it the cloth and rings to their original position. The order of working may be reversed, that is to say, the gas may be introduced above the diaphragm, and in this case the diaphragm should be counterpoised. The mode secondly described consists in taking the air tight cloth, suspended from the diaphragm, round rollers placed in grooves at the bottom of the cubical chamber. The grooves being filled with quicksilver form an air-tight joint; or the diaphragm itself may be made air-tight by means of elastic packing, and the varnished cloth be thereby dispensed with; the elastic packing used may be made of a leather case in which mercury is placed, or the leather case may be filled with wool. The Patentee proposes, lastly, to make such gasometers of such suitable form as will admit of their being mounted on wheels, whereby the gas may be transported to other parts.

[Printed, 2s. See *Repertory of Arts*, vol. vi. (*third series*), p. 144. *London Journal (Newton's)*, vol. iii. (*second series*), p. 152. *Register of Arts and Sciences*, vol. i. (*new series*), p. 81. *Engineers' and Mechanics' Encyclopædia*, vol. i., p. 601.]

A.D. 1827, March 2.—N° 5471.

LEDSAM, JOSEPH F.—“Purifying coal gas.” The ammoniacal liquor is saturated with muriatic acid and evaporated down till it crystallizes; to a solution of 100 lbs. of muriate so obtained is added about 50 lbs. of lime. Through this mixture the gas to be purified is caused to pass. When the muriate of ammonia in the purifier is spent, this liquor is drawn off and saturated with muriatic acid; by subsequent evaporation and crystallization the muriate of ammonia may be recovered together with muriate of lime. The latter is used instead of muriatic acid for converting the ammoniacal liquor into muriate of ammonia. Sulphuric acid may be used instead of muriatic, and magnesian lime instead of common lime, when sulphate of magnesia will result as a product.

The fetid odour of gas may be destroyed by the use, in a wet or dry state, of the “chloruret of oxide of sodium, or the chloruret ‘of the oxide of calcium, or chloruret of lime.’”

[Printed, 3d. See *Repertory of Arts*, vol. vi. (*third series*), p. 312. *London Journal (Newton's)*, vol. i. (*second series*), p. 228.]

A.D. 1827, August 15.—N° 5541.

PINKUS, HENRY.—“An improved method or apparatus for ‘generating gas to be applied for lights and other purposes.’”

The improvement consists in “the application to a common fire-grate, kitchen range, or other ordinary fire-place used for domestic or other purposes, of cylindrical (or other shaped) retort” for making gas. The Patentee recommends a retort divided longitudinally into four compartments; by this means, when the coals in one compartment are exhausted, the retort may be turned partially round, so that one of the other compartments, containing fresh coal, may be subjected to the highest degree of heat.

[Printed, 1s. 1d. See Repertory of Arts, vol. vii. (*third series*), p. 245. London Journal (*Newton's*), vol. i. (*second series*), p. 272. Engineers' and Mechanics' Encyclopædia, vol. ii., p. 480.]

A.D. 1827, November 17.—N^o 5563.

PINKUS, HENRY.—“An improved method of purifying carburetted hydrogen gas for the purposes of illumination.” “After refrigeration and after condensation has taken place in the gas, the Patentee causes it to pass through a solution of the chloruret of oxide of sodium or of lime, or chloride of lime (bleaching powder), which solution may be contained in one or more vessels having shelves in the usual way;” or the chloride of lime may be used in the state of powder. The solution of chloride of lime, when it has become impure, may be made to flow in a small stream into the gas retort, or into a separate retort, and the “vapours or gasses” arising therefrom, “combining or mixing with the carburetted hydrogen gas,” will partly purify it, or “render it more easily acted upon in its passage through the solution of chloride of lime.” The Patentee describes a small sized purifier suitable for domestic purposes, in which is placed a sponge kept saturated with a solution of chloride of lime, through which the gas is caused to percolate upwards on its way to the burners.

[Printed, 7d. See London Journal (*Newton's*), vol. i. (*second series*), p. 279. Register of Arts and Sciences, vol. ii. (*new series*), p. 274. Engineers' and Mechanics' Encyclopædia, vol. i., p. 604. Rolls Chapel Reports, 7th Report, p. 126.]

A.D. 1828, March 6.—N^o 5624.

BARNARD, HENRY BROOK.—“Improvements in the construction and setting of ovens or retorts for carbonizing coal for the use of gas works.” These improvements, in so far as they relate to retorts, consist in constructing the top and bottom of the retort in two parts, joined together gas tight without bolts or screws,

so that when one part has become worn out by use, that part may be replaced without the whole. The joint may be caulked with iron boring cement. The upper part of the retort is cast to fit a groove made round the bottom part. In fitting up this retort the Patentee protects the bottom and sides, first by means of a coating of fire-clay tiles, and further by interposing between the tiles and the fire a brick arch, through which flues are made to conduct the heat to the retort.

[Printed, 8d. See *Repertory of Arts*, vol. viii. (*third series*), p. 358. *London Journal (Newton's)*, vol. vii. (*second series*), p. 29.]

A.D. 1828, April 29.—N° 5644.

BOMPAS, CHARLES CARPENTER.—“ Improvements in the “ propelling of locomotive carriages and machines and boats and “ other vessels.”

This invention consists in condensing or compressing air or gas, either by its being disengaged chemically from substances, or through the means of condensing pumps, into suitable vessels capable of sustaining a great degree of pressure. Such reservoirs may be attached to carriages, boats, &c., and the power arising from the expansion of the air or gas may be used as a motive power by applying it to engines with cylinders and pistons, rotary engines, &c., suitably adapted to the work to be done.

[Printed, 8d.]

A.D. 1828, June 10.—N° 5663.

WITTY, RICHARD.—“ Improvements in apparatus for making “ and supplying coal gas for useful purposes.” The useful pur-
poses referred to are for the production of “ heat.” This
invention may be looked upon more as an improved mode of
burning coals under boilers, &c. The fresh coal is placed in a
hopper, the lower opening of which communicates with a retort,
and through which the coals are admitted into the retort. The
front end of the retort may be made of iron, and the inner end
of fire brick. At the further end of the retort is placed a set of
fire bars almost perpendicular as regards position, within which
is kindled a coke fire. The coal in the retort is then moved
backwards towards the inner end by means of a plate or piston
placed in the retort and actuated by a screw. Here the coal is
met by the flame and fumes ascending from the burning coke,

and being carbonized the gas produced is also consumed. The flame and heat arising may then be applied to the heating of boilers or other vessels, kilns, &c. But little smoke will be produced. The carbonized coal falls into the coke fire-place and keeps up the combustion there. The Patentee proposes also to improve the ordinary gas retort by indenting it on the upper side, thereby forming a V-shaped channel along the whole length of the retort.

[Printed, 6d. See *Repertory of Arts*, vol. viii. (*third series*), p. 480. *London Journal (Newton's)*, vol. viii. (*second series*), p. 247. *Mechanics' Magazine*, vol. xix., p. 387.]

A.D. 1828, October 2.—N^o 5712.

BRUNTON, JOHN.—“Apparatus for manufacturing coal gas “ and coke, and also my improvements in arranging such apparatus.”

These improvements consist, first, “of retorts made of a “ conical shape for the purpose of facilitating the discharge of “ the coke at the larger end when the retorts are fixed in a “ vertical position with that end downwards.” Secondly, “in “ the introduction of a perforated pipe of a conical or other con- “ venient shape into the retorts, for the purpose of enabling “ the gas to escape freely through the mass of coal when it is “ of such a nature as to make it desireable to facilitate the escape “ of gas by some such means. Thirdly, in an improved furnace “ or fire-place door or mouth. Fourthly, in a contrivance for “ preventing the breaking or disturbance of flanches or joints “ by the expansion and contraction of the hydraulic main, or “ the pipes leading thereto.” This may be effected by causing the mains to bear on a “crutch,” which will move with the main; and also by leaving the “dip pipes” with a certain play. And, fifthly, in the arrangement of the different parts of the apparatus.

[Printed, 7d. See *Repertory of Arts*, vol. ix. (*third series*), p. 257. *London Journal (Newton's)*, vol. v. (*second series*), p. 140. *Register of Arts and Sciences*, vol. iii. (*new series*), pp. 286 and 385.]

A.D. 1829, February 12.—N^o 5771.

HEARD, EDWARD.—“Improvements in illumination, or producing artificial light.”

For this purpose the Patentee “takes from the class of those “ solid substances which have not been heretofore used for

" making inflammable gas for that purpose, a residuary matter
 " obtained in the manufacture or preparation of tallow from
 " raw fats, known in common by the name of greaves or graves,
 " as also the residuary matters from other species of fats com-
 " monly called stuff. Likewise the residuary or refuse substances
 " which are obtained in manufactories where horns, hoofs, bones,
 " hides, skins, leather, or other greasy or inflammable matters
 " are employed; as also those left after the expression of oils
 " from the seeds, such as are known in commerce by the names
 " of linseed oil cake, rapeseed oil cake, mustard seed cake,
 " almond oil cake, poppy oil seed cake, and all others so pro-
 " duced. Also beech nuts or mast, cocoa nuts, and all others
 " abounding in oil which have not hitherto been generally or
 " publicly known to have been employed for this purpose. These
 " solid bodies are employed either separately or in combination
 " with each other, and in such proportions as may be found
 " most suitable for the production of light of the best quality
 " with most economy. These substances are to be placed in
 " retorts or other proper vessels, and exposed to the requisite
 " degrees of heat for eliminating or setting free their gaseous
 " products. From the class of fluid inflammable bodies, as well
 " as those of a butyraceous nature, take coal tar, the black oil
 " obtained in the distillation of bones and other animal sub-
 " stances, cocoa-nut oil, palm oil, and other similar inflammable
 " bodies, and mix two or more of them together in those pro-
 " portions which may be found most advantageous." " This
 " compound oily mixture is to be decomposed by the application
 " of heat in a similar manner."

The Patentee also claims "the application of a well-known substance discovered by a French chemist, and termed by him 'margarine,' to the manufacture of candles, to be used either separately or in combination with wax, spermaceti, tallow, or stearine, in any proportions of one or more of these substances, as may be found most eligible."

[Printed, 3d. See Repertory of Arts, vol. x. (*third series*), p. 268. London Journal (*Newton's*), vol. iv. (*second series*), p. 27. Register of Arts and Sciences, vol. iv. (*new series*), p. 35.]

A.D. 1829, April 28.—Nº 5784.

PICKERING, PETER, and PICKERING, WILLIAM.—" An engine or machinery to be worked by means of fluids, gases, or

"air, on shore or at sea, and which they intend to denominate
"Pickering's engine."

[No Specification enrolled.]

A.D. 1829, July 2.—Nº 5807.

KILBY, THOMAS, and BACON, HUGH FORD.—A new or improved gas lamp or burner.

This invention relates to a mode of regulating the supply of air to gas while being consumed in an Argand burner. For this purpose the metallic glassholder or support outside of the Argand may be perforated with holes, which will adjust the supply of air on the outside of the burner, while the supply through the internal aperture may be regulated by the introduction of a piece of metal which will contract the passage. This piece of metal may be simply a diaphragm with an aperture through it, but may be, and in preference, in the shape of a "cylindrical piece of metal, having a hollow frustum of an inverted cone formed in it internally." This shape allows "the air to spread or expand so as to strike against or impinge on the flame."

[Printed, 5d. See Repertory of Arts, vol. xi. (*third series*), p. 89. London Journal (*Newton's*), vol. v. (*second series*), p. 22. Mylne and Craigs' Reports, vol. iv., p. 433. Beavan's Reports, vol. i., p. 382.]

A.D. 1829, November 2.—Nº 5860.

DANRE, GEORGE.—A self-acting air or gas regulator or stop-cock for governing the flow of air or gas, which may be applied to other purposes.

[No Specification enrolled.]

A.D. 1830, February 12.—Nº 5900.

COWPER, EDWARD.—"Improvements in the manufacture of "gas." This invention consists "in regulating the supply of oil " (which includes all oleaginous fluids) to the retort in exact "proportion to the quantity of gas consumed by means of a self- "acting governor or regulator, in consequence of which the large "reservoir of gas, commonly called a gasometer, is rendered "unnecessary." This may be effected by attaching one end of a lever or rod to the cock which supplies the oil to the retort, and the other end to the top of a pipe inverted in water, and in a manner

floating in it ; in the interior of this pipe is another smaller pipe, the mouth of which is above the level of the water, and the other end communicates with the consumption pipes. As the pressure in the consumption pipes increases it causes the first pipe mentioned to rise higher in the water, and being connected to the rod it is also elevated and so turns the cock, and the supply of oil to the retort is thereby diminished or entirely cut off, as required.

[Printed, 8d. See Repertory of Arts, vol. I. (*third series*), p. 217; and vol. I. (*new series*), p. 167. London Journal (*Newton's*), vol. I. (*conjoined series*), p. 260.]

A.D. 1830, April 5.—N^o 5926.

PINKUS, HENRY, and COLLIER, JAMES.—“An improved method and apparatus for generating gas for illumination.”

Consisting, “first, in an improved compound material, the object of which is the more convenient use of certain resinous bitumen, such as common rosin, pitch, or Archangel or Stockholm tar, or a solution of any of these with coal tar; to these are added sugar or molasses, or other combustible matter having similar properties; these, in decomposing by a red heat with the bitumen, prevent the formation or development of certain acid, by the action of its oxygen, which acid act on the metal of the retorts, and are exceedingly detrimental to them.”

“Second, in effecting such neutralization by means of admitting into the retort, when in action, an excess of ammoniacal or hydrogen gas.”

“Third, in passing the fluid material to be decomposed first through strong metal tubes, called generators, in which it is kept under strong pressure, either by means of a force pump or a high column of the fluid, which becomes heated to a high degree of temperature, and is rendered thinner before it is admitted into the retort, into which it is injected in small streams or sprays by the action of a force pump, or its expansibility by the absorbed heat.”

“Fourth, in combining with these improvements the principle of a revolving retort divided into compartments, for which a patent was granted to me, the said Henry Pinkus, dated fifteenth August, one thousand eight hundred and twenty-seven.”

“Fifth, in the adoption and combination of a feed-valve and compensation valve or governor.”

"Sixth, in completing the manufacture of the gas by further
 "abstracting its impurities, and rendering it more fit for use by
 "means of a dry chloride of lime purifier, placed at what is called
 "the outlet valve, which so purifies the gas after it has left the
 "gasometer on its passage to the street mains or burners."

[Printed, 10d. See *Repertory of Arts*, vol. xi. (*third series*), p. 147. *London Journal (Newton's)*, vol. vi. (*second series*), p. 182. *Register of Arts and Sciences*, vol. v. (*new series*), p. 169. *Rolls Chapel Reports*, 7th Report, p. 132.]

A.D. 1830, August 5.—N° 5966.

DOWN, JAMES.—"Improvements in making gas for illumination, and in the apparatus for the same."

These improvements consist, "first, in making or generating gas for the purposes of illumination out of certain portions of the residuum, which in the ordinary mode of conducting the process is not available for these purposes, by passing crude or nascent gas, with its vapours of tar and ammonia, through a long stratum of ignited charcoal or coke, and thereby evolving an additional quantity of gas from the impurities of the said nascent gas." And, secondly, "in an improved box or vessel contrived to contain a long stratum of charcoal or coke in a state of ignition in a small compass," that is to say, "I provide a box or vessel of iron, or such other substance as will withstand the action of heat, and furnish the same with divisions, which I nearly fill with charcoal or coke. This box or vessel may be connected with the ordinary retorts, and by this means the necessary purity will be obtained by the very process of generating it from the impurities of the nascent gas without any special apparatus for that purpose."

[Printed, 6d. See *London Journal (Newton's)*, vol. vii. (*second series*), p. 181. *Mechanics' Magazine*, vol. xv. p. 205. *Register of Arts and Sciences*, vol. vi. (*new series*), p. 1. *Rolls Chapel Reports*, 7th Report, p. 133.]

A.D. 1830, October 6.—N° 6003.

DONOVAN, MICHAEL.—"An improved method of lighting places with gas."

This invention relates to the enriching of those gases which afford little light while burning by substances which will impart to them a higher illuminating power, and may consist in bringing the gas (in preference) produced by the action of steam on

coke, &c. heated to redness into contact with the liquid or vapour of spirit of turpentine, spirit of vegetable tar, coal naphtha, naphthaline, or similar substance, heated or otherwise, and employing the combined mixture as the illuminating agent. This object may be effected advantageously in an apparatus attached to the burner or otherwise.

[Printed, 6d. See *Repertory of Arts*, vol. xi. (*third series*), p. 279. *London Journal (Newton's)*, vol. vi. (*conjoined series*), p. 234. *Register of Arts and Sciences*, vol. vi. (*new series*), p. 37.]

A.D. 1830, October 20.—N° 6020.

CLEGG, SAMUEL.—“Improved gas meter.”

This invention relates to a meter which shall work without the aid of water, and consist of an air-tight chamber provided with an entrance and an exit pipe for the gas. In the interior of the chamber are two glass globes connected to and communicating one with the other by means of a glass tube bent into the form of an S. This instrument is poised upon a horizontal axis affixed to the bent tube in such a manner that the globes may rotate freely. The interior of the globes are partly filled with alcohol or other volatile liquid. The rotation is produced as follows:—A small flame of gas is kept burning under the gas chamber, which raises the temperature of the enclosed gas, and thereby heating the alcohol contained in the lower globe causes some of it to rise into vapour, while the upper globe being in a position opposite the inward flow of cool gas, is thereby kept cooler than the lower globe, and condenses the vapour again into a liquid, and that in proportion to the quantity of cool gas passed into the chamber. When this condensation has proceeded to a certain extent, the upper globe becomes top heavy and rolls round to the place previously occupied by the lower globe. Suitable checks and catches are applied to prevent it turning too far. So long as the heat is applied and cool gas enters, the rotation of the globes will be continuous, and the number of rotations may be registered by adapting to the axis a suitable registering apparatus. To counteract the effect of variation of temperature in the stream of entering gas, the entrance pipe may be made to coil in the interior of the gas chamber, so that it may absorb some heat from the heated gas contained in the chamber, and thereby preserve a better comparative equilibrium of temperature. When the heat is withdrawn, or is reduced so far as to be insufficient to main-

tain the proper rotation of the globes, the flow of gas will be stopped by a valve on the mouth of the exit pipe, which is actuated on the thermometric principle, namely, by a series of rods and levers attached to it, the expansion or contraction of which opens or closes the valve in a self-acting manner.

[Printed, 8d. See London Journal (*Newton's*), vol. vii. (*conjoined series*), p. 290. Mechanics' Magazine, vol. xv., p. 321. Register of Arts and Sciences, vol. vi. (*new series*), p. 70.]

A.D. 1831, April 21.—N^o 6109.

DIXON, WILLIAM.—(A communication.)—“ Improvements on “ the cock or tap, applicable to fluids, liquids, and gases.”

These consist in introducing within the barrel (surrounding the cylindrical plug) of any suitable cock, two elastic hollow cylinders or collars, which being placed in recesses formed in the barrel and firmly pressed by screws and thereby caused to act against the plug, will form a water and gas-tight packing. The elastic cylinders may be made of leather, caoutchouc, cork, or other similar material. The cylindrical plug of the cock is made hollow, and the lower part is perforated with holes, which perforated part when screwed down by means of a five-threaded male and female screw attached to the cock handle, so as to cause the apertures to pass down within the lower elastic collar, will shut off the water or gas; but when again screwed up till the apertures become opposite the mouth of the entrance pipe, then the cock becomes open by a communication being established through the holes to the mouthpiece.

[Printed, 6d.]

A.D. 1831, May 18.—N^o 6113.

COOPER, ROBERT BURTON.—“ Improvements on a cock or “ tap, applicable to fluids, liquids, and gases, and for applying “ the said improvements to other useful purposes.”

These consist in forming the plug of the cock of a “ spherical “ or globular form,” and of a diameter sufficient to fit a spherical part of the barrel. The spherical part of the barrel is divided and bolted together so that it may be screwed up and cause the spherical plug to work fluid or gas-tight within it. The plug may be solid with one or more passages for the fluid, &c., bored through it, or it may for larger plugs be made hollow. Suitable pivots pass

through the barrel, and are attached to the axis of the plug, by which the plug may be turned so that the fluid, &c. may be stopped off or turned on as required. By another modification the plug may be made of the form of half a sphere only, and placed in a spherical barrel as above. In this case the half plug is placed obliquely in the barrel, and is bored in such a manner that by turning the plug by means of a handle the bore hole may readily be brought into the proper line for the passage of the fluid, &c. The application of such spherical plugs may be varied to suit the purpose to which they are to be applied. This invention likewise relates to improvements in "covers for porcelain jars, stoppers to " glass cruetts, bottles, &c., and ink bottles."

[Printed, 6d.]

A.D. 1831, June 2.—N° 6123.

SPINNEY, THOMAS.—"Improvements in apparatus for manufacturing gas for illumination."

This invention consists "in the adaptation of a valve of any suitable construction to the ascension pipe of a gas retort, oven, " or generator, for the purposes of superseding the necessity of the " hydraulic main hitherto used." This may be effected by passing the ascension pipe through the bottom of a closed box, containing water or other fluid; the mouth of the ascension pipe is elevated above the surface of the water, and suspended over it is a cap or cover, which may be depressed by a screw till its edges, enclosing the ascension pipe, enter sufficiently into the water to prevent the gas passing round. The box is provided with a suitable opening to allow of the thorough passage of gas when the cap is again elevated.

[Printed, 6d. See London Journal (*Newton's*), vol. viii. (second series), p. 187. Rolls Chapel Reports, 7th Report, p. 134.]

A.D. 1831, October 3.—N° 6174.

CROSSLEY, SAMUEL.—"An improved gas meter."

[No Specification enrolled.]

A.D. 1831, October 12.—N° 6179.

LOWE, GEORGE.—"An improvement or improvements in and " connected with the manufacture of gas for illumination."

These improvements consist, first, "in the introduction of atmospheric air raised to a high degree of temperature [say 700° F.] over or on the surface of the fuel in the furnaces of gas works, for the purpose of uniting with and thus igniting the sulphuretted hydrogen gas, and also the gases and vapours arising from lime, dred water, and ammoniacal liquors introduced under the bars of the furnace ; and the products or results of the ignition of which gases and vapours I direct into condensers, so as to produce sulphurous acid, which acid I use in purifying gas."

" Secondly, in working off the charge from gas retorts by fitting them with appropriate apparatus, and by putting the coal [or tar contained in pans] in at each end alternately half of the length of the retort, and at proper intervals, so that the inferior gas evolving from the portion of coal first introduced may mix with the better gas evolving from that portion subsequently introduced."

" Thirdly, in rendering gas, produced from coal for the purposes of illumination, more free from ammonia and its combinations with sulphuretted hydrogen and other impurities than heretofore, by the application or introduction of sulphurous acid [or muriatic acid] in solution or combination with steam, into the gas as it leaves the condensor ; and by the introduction of potash placed on a sheet of iron laid on the surface of the coal in the retort."

" And, fourthly, in the application of a new apparatus to retorts, coke ovens, or furnaces of gas works, for the purpose of receiving the hot coke drawn therefrom, and generating gas by means thereof."

The apparatus here referred to may consist of a metal cylinder into which the retorts may be emptied of their red hot coke, air being admitted through grate bars at the bottom till the coke becomes white hot if possible ; the vessel is then closed top and bottom, and a current of steam passed through it. The gas thereby produced should then be enriched by saturating it with the vapour of essential oil or other illuminating material.

[Printed, 10d. See *Repertory of Arts*, vol. xiii. (*third series*), p. 330. *London Journal (Newton's)*, vol. i. (*conjoined series*), p. 390. *Register of Arts and Sciences*, vol. vii. (*new series*), p. 140.]

A.D. 1832, March 15.—N^o 6242.

DAY, JOHN.—“ An improvement in the manufacture of cocks “ used for the stopping and drawing off gas and water, and for “ other purposes for which cocks are now used.”

The cock described, first, in this invention contains a valve suitably guided by a rod and guide to ensure a perpendicular motion, and by studs and pins, or other means, to prevent it turning round. This valve, placed within the barrel of the cock, is lowered to or raised from its seat by a rod connected to it underneath, having a male screw on its end which works into a screw connected to the mouthpiece of the cock. On turning the mouthpiece the valve is elevated or lowered as required. Within the mouthpiece and between it and the bottom of the valve seat is introduced an elastic collar or packing made of leather, cork, india rubber, &c., which may be screwed up by means of a collar that embraces the mouthpiece and screws into the outside of the barrel, so as to form a joint perfectly air tight. By a second modification, the valve may be caused to rotate on its seat by the turning of the mouthpiece, whereby suitable openings for the passage of gas, &c. through the valve and its seating may be made to correspond the one with the other, or otherwise, as required. By a third modification, the valve, having suitable packing on one or both sides, and provided with a hole for the passage of gas, &c., may be caused to slide up and down over the valve seating by means of a handle and screw.

[Printed, 10d.]

A.D. 1832, June 9.—N^o 6276.

LOWE, GEORGE.—“ Increasing the illuminating power of such “ coal gas as is usually produced in gasworks; also, for con- “ verting the refuse products from the manufacture of coal gas “ into an article of commerce not heretofore produced therefrom; “ and also of a new mode of conducting the process of condensa- “ tion in the manufacture of gas for illumination.”

Firstly, “ the illuminating power of such coal gas as is usually “ produced in gasworks, may be increased by impregnating such “ gas with naphtha, commonly called spirit of coal tar, or with “ any other volatile hydro-carbonaceous liquid, by any convenient method.

Secondly, “ in order to obtain Prussian blue from the ammo- “ niacal liquor, I well mix about an ounce of sulphate of iron or

“ green vitriol (in solution with water) with every imperial gallon
 “ of the ammoniacal liquor of the specific gravity of 1,031, and
 “ when so mixed, I super-saturate the liquor by adding sixteen
 “ ounces of sulphuric acid or oil of vitriol of the specific gravity
 “ of 1,850, when there will be found a blue precipitate subsiding
 “ to the bottom, and which may be collected by decanting or
 “ filtration, and then washed and dried in the usual manner for
 “ obtaining Prussian blue. The same process may be applied to
 “ the refuse lime liquor of gasworks, when a quantity of sulphate
 “ of lime will be deposited along with the Prussian blue, which
 “ combined substances, after being collected, washed, and dried,
 “ as usual, will be found to be a colouring matter highly useful
 “ in the arts.”

Thirdly, consists in “ allowing the coal tar to pass off by means
 “ of self-acting syphons at different parts of the condenser while
 “ in operation, so that it may be collected in different portions,
 “ each portion of which will thus be of a different degree of
 “ temperature, and consequently of a different specific gravity.”

[Printed, 6d. See *Repertory of Arts*, vol. xv. (*third series*), p. 74. London
Journal (Newton's), vol. xii. (*conjoined series*), p. 137, and vol. xxviii.
(*conjoined series*), pp. 55 and 448.]

A.D. 1832, November 13.—Nº 6333.

SPINNEY, THOMAS.—“ An improved earthenware retort for
 “ generating gas for the purpose of illumination.”

The retort referred to “ consists of a combination of the
 “ following materials :—Stourbridge fire clay (or other clay);
 “ burnt Stourbridge fire clay, pipe or potter’s clay, sand, sulphate
 “ of iron, commonly called green copperas, and potter’s lead ore,
 “ in suitable proportions and properly tempered. The materials
 “ thus combined may be moulded into retorts of any required
 “ form; they may be made in one or more pieces as may be found
 “ most convenient. If made in one (or more) pieces after being
 “ dried, it must be brushed over with a glaze or cement com-
 “ posed of potter’s lead ore, three pounds; sand, four pounds;
 “ sulphate of iron, one pound; pipe or potter’s clay, one pound.”
 These are to be reduced to fine powder and mixed with as much
 “ water as will bring them to the consistence of paint.” The
 retort so made should then be smoked in the kiln, and burned in
 the usual manner.

[Printed, 3d. See *Repertory of Arts*, vol. xv. (*third series*), p. 329. London
Journal (Newton's), vol. viii. (*conjoined series*), p. 412.]

A.D. 1833, January 29.—N° 6375.

BUTLER, RICHARD.—“ Improvements in manufacturing, obtaining, or producing oil from certain substances, and in extracting, producing, or obtaining gas from the same or such like substances, or from oil produced therefrom.”

“ The substances from which are to be extracted oil and gas are bituminous schistus or shale and slate (not including slate coal), and bituminous sandstone, and substances, when pure, do not usually cake if ignited, or thrown into a good fire, and which, by distillation or carbonization, give an oil and gas free from napthaline.” These substances, broken into small pieces, may be placed in an ordinary retort, and some water may be added to them, but if the principal object is to obtain “ gas” they should be previously carefully dried. According as the heat is raised in the furnace so will be the products of distillation from the contents of the retort; first, watery vapour issues, next a yellow oily vapour, and, lastly, oil is distilled over accompanied by gas. If gas alone be desired, the retort should be quickly brought to the red heat. The various vapours, oils, and gases so produced may be passed through a set of condensers resembling “ Wolf’s apparatus,” and other apparatus, where the oils and vapours will be condensed, while the gas will pass on to the gasometer. These oils will by this means be separated into various qualities more or less dense or volatile; and in the rough state may be purified by sulphuric acid or other means. They may be again heated as other oils and converted into gas. If that oil named by the Patentee, No. 2, be distilled to the extent of one half, the remaining half at a low temperature will deposit small flakes of a white odourless, and light substance, which is a compound of carbure and hydrogen.” The oil and the gas so produced, if the pure raw material be used in the retort, will be alike free from napthaline.

[Printed, 3d. See Repertory of Arts, vol. xvi. (*third series*), p. 211. London Journal (*Newton’s*), vol. iv. (*conjoined series*), p. 123.]

A.D. 1833, February 6.—N° 6381.

DICKSON, JONATHAN, and IKIN, JAMES.—“ Improvements in the process of making gas from coal or other substances.”

The first part of this invention may be effected by keeping “ a large quantity of fuel in a low degree of combustion, and

" closely shut up in a chamber of brickwork or other materials, " which chamber is called a kiln. In this kiln the retort or " retorts of any shape or size, and made of any materials, are " placed in any position in immediate contact with the fuel which " heats them; consequently these will generally have the same " degree of heat as the ignited fuel that touches them, and this is " regulated by the admission of atmospheric air through holes or " openings with doors or stoppers fitted to them for that purpose. " By this means the process of gas making may be carried on " without the use of a chimney by burning coke, charcoal, breeze, " cinders, or any other combustible body not containing much " glutinous matter."

Second, in the "mode of cooling, condensing, and purifying " the gas by absorption in a vacuum, which is applied after the " gas has passed the hydraulic main and deposited its tar and " ammonia liquor in the common way; then, and not till then, do " we admit it into a compound vessel or separate vessels to be " purified before it enters the gasometer or gas-holder." This vessel has numerous shelves in it over which water or lime water is caused to trickle and dash from shelf to shelf.

" Our next improvement is a mode of producing and main- " taining a vacuum [or pumping] by means of steam used only " as an agent, in place of using it as a power through the means " of an engine and other machinery, which apparatus, combina- " tion, or arrangement of things already known (applied to this " purpose) we call a steam conductor, trap, or decoyer of the gas " from the purifier into the gasometer or gas holder."

[Printed, 6d. See Repertory of Arts, vol. xvi. (*third series*), p. 144. London Journal (*Newton's*), vol. xiv. (*conjoined series*), p. 307.]

A.D. 1833, March 19.—N° 6398.

BERRY, MILES.—" Improvements in the making or constructing " of gas meters."

These improvements relate to that class of meters called "dry meters," and consist of a hollow chamber perfectly gas tight, and divided into two equal parts by a perpendicular diaphragm which may move freely on a hinge at the bottom of the chamber. The diaphragm all round is attached at its periphery to a flexible and gas-tight fabric, or other material, which is also attached to the sides of the chamber, thus dividing the chamber into two compartments of known capacity. The gas on flowing into one compart-

ment moves by its pressure the diaphragm till it reaches one side of the chamber, when a handle to the feed cock is disengaged from a catch, and the cock, which is a four-way cock, is suddenly by means of a spring turned in a reversing direction. The effect of this is to turn off the gas from the first compartment, and to turn it on to the second compartment; and at the same time to shut the exit pipe from the second compartment, and open it to the first. The second compartment begins then to fill, and the gas in the first to escape to the gasholders or burners. These oscillations are registered through the means of a lever attached to the diaphragm, which actuates a pall and ratchet wheel and registering apparatus.

The Patentee shows other forms for the chamber, and various forms of cocks for reversing the flow of gas. The apparatus may be made of any suitable material, and may be placed horizontally if desired.

[Printed, 1s. 6d. See London Journal (*Newton's*), vol. x. (conjoined series), p. 321.]

A.D. 1833, October 12.—N° 6486.

HUTCHINSON, STEPHEN. —“ Improvements in machinery or “ apparatus for manufacturing gas for illumination, and in the “ mode or means of supplying gas to the consumer, and also in “ the construction of gas burners, parts of which improvements “ are applicable to other useful purposes.”

These improvements consist, first, in arranging in one furnace, say nine retorts in two arched rows, one above the other, and causing the heat and flame to pass under, over, and round the retorts after the manner of a reverberatory furnace.

Secondly, in substituting for the usual condensing pipes a “ box” kept cool by being immersed in water. This condenser box is partially filled with water, and is divided horizontally by a perforated plate, and perpendicularly by diaphragms in such a manner that the current of gas is caused to ascend and descend, and to pass to and fro in the vessel as may be required.

Thirdly, in arranging and dividing the interior of the “ purifier” by means of compartments, in such a manner that the gas will be caused to pass down through a perforated plate in one compartment, and ascend again through the perforations in another plate in a second compartment, upon which is placed the necessary dry lime, and so on to the further end of the box or purifier.

Fourthly, "in the construction of the gasometer or reservoir, by
 " the addition of an internal cylinder open at the bottom, and
 " sustaining the roof or covering, rising and sinking with the aid
 " of an hydraulic cup." The internal cylinder or gasometer has
 a turned up part filled with water all round its lower edge, which
 hooks on to the turned down upper edge of an outer cylinder.
 On this telescopic gasometer being filled with gas, the inner part
 rises first; it then hooks on to the outer part so as to form a water
 joint all round, and so continuing to rise draws it up along with it.
 A shallow "tank" is thereby only required.

Fifthly, "in the application of an instrument affixed to one of
 " the supports of the gasometer, for the purpose of showing at all
 " times by means of an index and dial the entire quantity of gas
 " in the gasometer."

Sixthly, "in the addition of a dial and index to the valve regu-
 lators of the mains, by which the extent of the aperture at the
 " valve may be ascertained."

Seventhly, "in the addition of a dial to the pin of the valve
 " attached to the branch pipes," in order to show how far they are
 open.

Eighthly, in an improvement in "burners," by the introduction
 of a "funnel into the centre of the burner, instead of the cylinder
 " of uniform diameter in general use." The object being to intro-
 duce a current of air, and by the funnel form of the orifice to drive
 it upon the flame.

By Disclaimer dated March 15th, 1841, the Patentee disclaims
 that part of the title of his invention consisting of these words,
 " and also in the construction of gas burners, parts of which im-
 " provements are applicable to other useful purposes;" also all that
 is included under the "first" head described regarding furnaces;
 also all that relates to the condenser described under the "second"
 head; also what relates to the purifiers under the "third" head;
 also all that relates to the index and dial described under the
 "fifth" head; also as regards all that is contained under the
 "sixth, seventh, and eighth heads." The Patentee also amends
 his Specification as regards the description contained under the
 "fourth" head.

[Printed, 3s. 6d. See London Journal (*Newton's*), vol. v. (*conjoined series*),
 p. 167. Mechanics' Magazine, vol. xxiv., page 417; vol. xxvi., p. 241; and
 vol. xxvii., pp. 55, 200, and 384.]

A.D. 1833, October 19.—N^o 6487.

BARNES, RICHARD.—“A certain machine or apparatus for “producing, by the combustion of gas or oil, heated air for “warming the interior of buildings, and which machine and “apparatus may be applied at the same time to give light.”

This invention consists in the combination of mechanical means, by which a current of air is caused to pass over and in contact with flame produced by the combustion of gas or oil, or over and in contact with metal heated by such flame. The heated air alone, or air heated and mixed with the products of the combustion of the gas, are employed for the purpose of heating buildings. Apparatus of various forms (of which there are several shown in the drawings) may be employed in carrying out the principle of this invention. Glass may be introduced into the bottom and sides of the combustion chamber, whereby light will also be obtained.

[Printed, 5d. See London Journal (*Newton's*), vol. xvii. (*conjoined series*), p. 225.]

A.D. 1834, September 25.—N^o 6680.

MOLLERAT, JEAN BAPTISTE.—“Improvements in the manu-“facture of gas for illumination.”

This invention consists “in utilizing the vapour of certain “volatile liquids which are very rich in carbon, to render luminous “various gases which are not so.” The Patentee prefers to use for this purpose, first, “the very volatile liquid obtained from the “distillation, at a gentle heat, of the tar produced in the manu-“facture of gas or coke;” second, the oils obtained from the “natural products known under the names of naptha, petroleum “of Malta, asphaltum, and bitumen;” thirdly, “the oil obtained “by the distillation of caoutchouc;” and generally any other oils which are very rich in carbon.

The gas or gases which may be rendered luminous by the addition of any of these oils is “either pure hydrogen, or a “mixture of hydrogen, carbonated hydrogen, and carbonic oxide;” but the gas or mixture of gases preferred is that obtained in passing “steam over red-hot charcoal reduced to a state of dust “or powder, or over red-hot coal.” The volatile oil may be mixed with the gas on its passage from the retorts to the gasometer, or in the gasometer itself.

[Printed, 3d. See London Journal (*Newton's*), vol. vi. (*conjoined series*), p. 73. Rolls Chapel Reports, 7th Report, p. 166.]

A.D. 1835, March 25.—N^o 6799.

BRUNTON, JOHN.—“ Improvements in the construction of “ retorts for generating gas for the purpose of illumination.”

What is claimed in this invention “ is, the arrangement and “ combination of the various parts of a retort, by which the coal “ [or other substances] is first introduced into and afterwards “ propelled through the retort, and the coke discharged from it, “ by which means the retort is kept at an uniform fulness, intro- “ ducing and discharging simultaneously bulk for bulk of coal “ [or other substance] into the retort, and coke out of it into a “ cistern of water, without exposing the interior of the retort to “ the cooling effect of atmospheric air, and in a great measure “ avoiding the loss of time, the waste of gas, and the laborious “ operations necessarily attendant on the usual methods of “ charging and discharging retorts.”

The coal or other substance is introduced into the front end of the retort by means of a hopper. This hopper is provided with a lid nearly air tight, and with a diaphragm placed half-way down the hopper. The feed coal being placed on the diaphragm the lid is closed, and the diaphragm removed when the coal is precipitated into the retort. A rod and screw is passed through a stuffing box in the end of the retort, the end of which is connected to a piston; and on turning the screw by means of machinery or by the hand the piston propels the coals forward into the retort, and causes the coke at the further end to drop into a vessel containing water.

The screw may then be reversed, and a fresh supply of coal introduced.

[Printed, 9d. See Repertory of Arts, vol. vi. (*new series*), p. 278. London Journal (*Newton's*), vol. viii. (*conjoined series*), p. 295. Mechanics' Magazine, vol. xxv., p. 449.]

A.D. 1835, April 9.—N^o 6810.

BACON, HUGH FORD.—“ An improved apparatus for regulating “ the flow of gas through pipes to gas burners, with a view to the “ uniformity of supply.” This invention consists in particular modes of employing the varying pressure of gas to regulate its own supply in its passage to the burners. The mode first described consists of a vessel or chamber divided horizontally into two parts by an elastic and gas-tight diaphragm. The portion above the diaphragm is provided with an inlet pipe for the gas, and an exit

pipe; the portion under the diaphragm communicates with the atmosphere; the end of the exit pipe protrudes into the vessel for some distance, and is closed at its end; in its side is cut a slit through which the gas escapes to the burners. When the pressure of the gas accumulates in this apparatus the elastic diaphragm becomes depressed, and being attached to a rod carries the rod down with it, to the upper end of the rod is attached a lever which actuates a curved piece of metal and causes it to enter the slit referred to, to a greater or less extent, according to the excess of pressure, and thereby stop off partially or wholly impede the escape of gas, as the length of the rod or the other adjustments may be determined upon. When the pressure of gas becomes lower than desired then a spring underneath the diaphragm, or a counterpoised lever, either of these carrying a smooth bent plate, presses up the diaphragm and rod, and withdraws the curved piece of metal from the slit, thereby allowing a more free passage for the escape of gas to the burners. The slit may be substituted by a "curved opening," which will be more or less covered by a plate actuated by the diaphragm and rod as before. The spring underneath the diaphragm may be replaced by an inverted vessel, which will be depressed into water contained in the lower part of the chamber more or less, according to the pressure of gas above the diaphragm.

Secondly, by another mode, the rod which had formerly been attached to the diaphragm is now attached to a float, which floats in water; outside of the vessel containing this float is another vessel surrounding the inner one, also containing water, and communicating with the inner vessel. When the pressure of gas increases the surface of the water in the inner vessel becomes depressed, and the float following, it causes the regulator, of whatever form, to act, as was the case with the depression of the diaphragm.

[Printed, 7d. See London Journal (*Newton's*), vol. xiv (conjoined series).
p. 89.]

P.S. The enrolment of the above specification having been stolen from the office, the above copy was made from the original specification, for the purpose of inspection and examination only; but no office copy can be issued, nor can the above transcript be issued as evidence

(Signed) H. G. ASBOTT.

A.D. 1835, May 19.—N° 6838.

DUMOULIN, ALEXIS.—“ Improvements in gas apparatus.” This invention consists of a “ portable [oil] gas apparatus, so arranged that the flame which gives off light will at the same time produce a supply of gas for further combustion.” The various parts of such an apparatus may be variously combined, but must consist of a reservoir for oil, from which the oil is forced up a pipe, part of which may be a capillary tube, by means of a solution of sulphate of zinc, and caused to enter a small vessel or retort placed over the flame proceeding from the burner or burners. Another small pipe leads off the generated gas to a small condenser, from which another pipe takes it into a small gas holder, and from thence it proceeds by a pipe to the burner or burners. The whole may be conveniently arranged into the form of a table lamp.

[Printed, 6d. See *Repertory of Arts*, vol. v. (*new series*), p. 166. *London Journal (Newton's)*, vol. xii. (*conjoined series*), p. 25.]

A.D. 1835, June 2.—N° 6844.

MALAM, JOHN.—“ Improvements in gas meters, and in the apparatus for generating gas for illumination.” This invention relates, first, “ to a new and simple arrangement of the parts constituting the meter, and in the mode of suspending it, whereby the friction or resistance of the water employed in the common meters is considerably overcome.” The meter is floated in the water contained in the casing by means of a circular float. The meter is thrown out of the horizontal position by means of one end of its axis being placed out of the perpendicular, which may be effected by attaching the other end of the axis in an oblique position to the arms or frame of the float, or by means of a crank. The gas in escaping by means of openings and passages causes the meter to revolve, and its revolutions may be measured by an index. A floating valve is adapted to the casing of the meter whereby any flush of water in the casing will elevate the float and open a valve and allow the excess to escape. Suitable provision is also made for the supply of water when required.

Secondly, relates to the application of “ regenerators ” to retorts of ordinary construction “ for the purpose of effecting “ a more perfect decomposition of the vapour arising from the coal in the process of distillation.” The “ regenerator ” consists of a pipe

or tube placed over the ordinary retort, and heated by the same furnace. Within the outer pipe is another smaller tube or pipe, into the front end of which the gas is conducted; it is then caused to pass to the far end of this tube, where it escapes into the outer tube, and returns to the front again, where it is led off to the hydraulic main. These tubes are sufficiently heated to produce the desired decomposition of the vapours.

[Printed, 1s. 3d. See London Journal (*Newton's*), vol. viii. (*conjoined series*), p. 137. Rolls Chapel Reports, 7th Report, p. 184.]

A.D. 1835, June 22.—N^o 6851.

CARTER, ELIAS. —“An improved apparatus for regulating the “ supply of gas to the burners, and for stopping off the same; “ applicable also as a cock in drawing off or regulating the flow “ of other fluids.”

This invention relates to a valve made of any suitable flexible material, and opened and closed by means of a screw.

The interior of the supply pipe is so formed at one part that the gas while it flows has to pass through a circular opening and over a partition within the pipe. A disc of leather is placed over the circular opening and secured in a gas-tight manner, and being flexible may be depressed on to the mouth of the opening, or elevated from it by means of a screw attached to it, and worked by a handle outside. The flow of gas or other fluid will thereby be regulated and stopped off as required.

[Printed, 6d. See Repertory of Arts, vol. v. (*new series*), p. 19. London Journal (*Newton's*), vol. viii. (*conjoined series*), p. 356. Mechanics' Magazine, vol. xxiii., p. 465.]

A D 1835, July 28.—N^o 6868.

CHAUSSENOT, HENRY BERNARD. —“An improved construction of the lamps or apparatus used for burning gas for “ producing a better combustion of the gas.”

The nature of this invention consists in heating the cold air required to supply the gas burner by means of the flame itself, that is to say, an argand burner should be fitted up with two or even three glass chimneys one within the other, and be so arranged that the cold air must pass between the outer chimneys and the inner one before it reaches the flame. The air will thus be heated previous to its reaching the burner, and will thereby produce a

better combustion of the gas. The drawings show various designs whereby the principle of this invention may be carried out with advantage.

[Printed, 10d. See *Repertory of Arts*, vol. v. (*new series*), p. 142. London Journal (*Newton's*), vol. xviii. (*conjoined series*), p. 8.]

A.D. 1835, August 17.—N^o 6884.

PHILLIPS, HENRY.—“Certain improvements in purifying gas “for the purpose of illumination.”

These improvements consist in the application of “saline liquors “or solutions by means of requisite apparatus to the process of “purifying gas [by abstracting the ammonia] for the purposes of “illumination.” The saline solutions mentioned are “either a “cold saturated solution of common alum water, or of the sul- “phate and chlorate of manganese, or of any other manganesian “salt either alone or separate, which may be obtained by lixiviating “the matter which remains after making chlorine or chloride of “lime for the use of the bleachers from the materials commonly “employed for that purpose.” These substances should be applied to the gas after it has passed the usual purifiers. The gas may be passed through a box with shelves in it; on the shelves is placed refuse, tan, twigs, coke, hair, or other such substances, which is kept moistened by the saline solution dropped down through a perforated plate. The gas is caused to pass up through these layers.

By “Disclaimer and Memorandum of Alterations,” dated “First February, 1841,” the Patentee states the word “chlorate,” used above, should be “chloride;” and the words “or any other “magnesian salt, either alone or separate” should be disclaimed.

[Printed, 4d. See *Repertory of Arts*, vol. v. (*new series*), p. 302; also vol. xv. (*new series*), p. 157 for Disclaimer. London Journal (*Newton's*), vol. xiv. (*conjoined series*), p. 237.]

¶ A.D. 1835, December 3.—N^o 6941.

GORDON, ALEXANDER, and DEVILLE, JAMES.—“Improvements in the production, maintenance, direction, or distribution “of light, parts of which improvements are applicable to other “purposes,” public or domestic.

This invention relates, first, to the obtaining of light by directing currents of mixed gases in a state of combustion against lime, to

which a certain motion is given. The gases used are oxygen and hydrogen, or carburetted hydrogen.

The lime employed of the required size is placed in a suitable case and rests on a disc to which an up and down motion in a rotary or spiral direction is imparted by means of screws actuated by a timepiece or other suitable mover. The lime thus presents fresh faces to the jets of flame which are caused to impinge upon its upper end. The gases are supplied from gasometers, which, having double tops, admit of water being introduced to give pressure to the gas to the requisite degree. In making hydrogen the zinc may be suspended in a cage within the gasometer, or within a separate vessel resembling a gasometer, and which is attached to and rises or falls with the main gasometer, in such a manner that the dilute acid will not act on it when the gasometer has so far risen as to elevate the zinc out of the acid, but will renew the action so soon as the zinc is again lowered into the acid through the lowering of the gasometer. A suitable bonnet is provided, by the removal of which the apparatus may be cleaned out. The oxygen is made in an iron retort in a stove heated to a red heat, a hopper or funnel being provided for the admission of the black oxide of manganese. A small cistern with an inlet and an outlet pipe supplied with a small current of water is provided so as to keep the jet tubes cool which supply the gas for the light.

Secondly, relates to improvements in various modes of reflecting and refracting light from whatever source obtained.

[Printed, 1s.]

A.D. 1836, March 8.—N^o 7023.

SIMMONS, BENJAMIN.—"Improvements in chemical retorts, " stills, and other apparatus, and in the machinery connected " therewith, and by the use and employment whereof various " processes can be speedily, conveniently, and economically " performed."

This invention consists, first, in the following mode of causing "chemical retorts" to "revolve or vibrate," while being heated with fire for the purpose of producing "coal gas, tar, coke, pyro- " lignous acid, ether, tar from wood, charcoal, ammonia, animal " oil from bones, bone black, oil gas, prussiate of potash or soda, " Prussian blue, and other substances." The cylindrical portion of the retort which is exposed to the heat has bolted to one of its

ends a cylindrical flanch, and to the other end is bolted another cylindrical flanch having a groove formed round its circumference. These two flanches carrying the body of the retort are supported each on two cylindrical friction wheels capable of revolving. The groove in the one flanch, in which two of the friction bearing rollers work, prevents the retort expanding at that end, while the other end is free to expand. The flanches and friction rollers are out of the furnace, and beyond the action of the fire. The retort is caused to rotate (or to vibrate only) by means of a wheel fixed on one end, working into a pinion driven by suitable power. The other end of the retort is provided with a door for the admission of the material used, and with suitable fastenings. The interior of the retort is fitted up with a central longitudinal pipe which passes out at the driving end of the retort for the escape of the gas, being provided with suitable openings and holes for the entrance of the gas into it; each end of the retort is fitted with suitable diaphragms to confine the heat. An internal scraper is suspended from the longitudinal pipe; and iron balls may be also introduced for the sake of their grinding action. The exit gas pipe is connected by means of a stuffing box to another pipe which conducts the gas to the condensing apparatus. The central part of the retort being most exposed to the heat may be taken out, and a new part put in.

Second, relates also to a "revolving chemical still" to be heated with steam, and used for distilling other volatile matters.

[Printed, 1s. 4d.]

A.D. 1836, March 8.—N^o 7024.

PALMER, GEORGE HOLWORTHY.—"An improvement in the
" purification of inflammable gases, and in apparatus by which
" the improvement is applied, such apparatus being also applicable
" to other useful purposes."

[No Specification enrolled.]

A.D. 1836, June 22.—N^o 7129.

BARNETT, WILLIAM.—"Improvements in apparatus for gene-
" rating and purifying gas for the purposes of illumination."
These improvements relate, first, to the mode of "constructing
" the roof or arch of the oven or outer chamber in which gas

" retorts are placed or set, and it consists in forming such roof or arch in parts or sections, consisting of oblong cases or troughs or frames of iron or other proper substance" placed side by side and of suitable form to make the desired arch. These cases should, when put together, be filled with coke, bricks, or such similar non-conducting materials, and the whole finally coated with fireclay or other similar substance. The materials which fill the boxes may be consolidated by the compression of moveable plates, which are placed in each end of each box, and the series of boxes may be tied together by suitable braces.

Secondly, relates to a "retort" constructed in "two parts." "The bottom plate at its longitudinal edges is furnished with a double rim to form a groove or socket for the reception of the upper plate. The depth of these rims is about two inches, and between them the longitudinal edges of the upper plate are to be inserted and securely fixed by iron or other proper cement. When the bottom plate is destroyed it may be removed by breaking the joint, and readily replaced by a new bottom.

Thirdly, relates to "an improved apparatus for the extrication and purification or inflammable gas." This consists of a retort made according to the Patentee's own form, as described, the ends of which are made to extend beyond the furnace, and are each supplied with an air-tight mouth-piece. In the front mouth-piece is a hole or screw nozzle, through which may be worked the rod belonging to a "plough" piece, and the back mouth-piece is provided with three similar nozzles for the admission and action of similar rods connected to scrapers. The coal is admitted into the retort from a hopper provided with a valve to exclude air, and is propelled forward and properly spread, and the coke finally ejected at the further end of the retort into a box supplied with an upper and lower damper or valve by means of these scrapers and ploughs actuated by screws. The retort is provided inside with a metal shelf, upon which is injected a small supply of water, the steam from which mixing with the gas causes a deposition of tar and other matters. The gas and steam on leaving the retort pass up the eduction pipe and through a box or kind of condenser from whence the gas and tar and other matters are conducted into the "digester."

Fourthly, the "digester" may consist of a pipe or tube of metal or earthenware divided into compartments "filled with coke, old iron, lime, or other similar detergative and refining substances,"

and heated by means of the same furnace or otherwise. The gas is caused to pass through the digester to and fro, and then on the expansion chamber and purifier.

Fifthly, relates to an "improved purifier," that consists of a conical shaped vessel, into which the unslackened lime is introduced by means of a hopper properly secured by a slide valve. The lime falls on a grating, and is there slackened by moisture in the gas, or by the introduction of water for the purpose. The exhausted lime is shaken through the grating and propelled along a sloping pipe by a rod to the further end, where it falls into a cistern.

[Printed, 1s. 2d.]

A.D. 1836, July 14.—N^o 7151.

BROWN, SAMUEL.—"Improvements for generating gas, which "improvements are also applicable to other useful purposes."

The object of this invention is to form, by means of a fusible metal, a joint whereby two portions of a retort or other similar vessel will be firmly united while the said joint is kept at a sufficiently low temperature, but when the temperature becomes elevated the metal will be melted and allow of the parts being easily separated. When applied to a gas retort the top, ends, and sides of the retort may be in one piece, and the bottom another piece. The lower edges of the ends and sides rest in a groove all round; the edges of the bottom are bent down and are caused also to be in the same groove. The groove is then filled with melted fusible metal, which on cooling and solidifying forms the joint. The groove is in the upper side of a hollow frame or box of metal, or other suitable material, which may be filled with water or other fluid, the circulation of which and cooling effect thereof keeping the fusible metal solid. If it be desired to remove the burned out bottom, for instance, the water is drawn off from the hollow frame, and the heat being continued the fusible metal will melt and the fixity of the joint be destroyed.

[Printed, 9d. See Repertory of Arts, vol. vii. (*new series*), p. 170.]

A.D. 1836, October 28.—N^o 7215.

EDGE, THOMAS.—"Improvements in lighting or illuminating "by gas, oil, or spirit lights or lamps." Partly a communication.

These consist in constructing gas lamps, &c., so that they may be placed on the outside of shop fronts or windows, or of glazed show cases, or in other positions where it is desirable to exclude the deleterious vapours arising from the combustion of the gas. The lanthorn is glazed on its front and sides, and the back part is formed of a proper shaped reflector, pierced by a ventilating chimney. Such lanthorns may be suspended by the gas pipe, or they may be attached to pillars outside the shop window, or to the framing of the window itself, or otherwise.

[Printed, 9d. See *Repertory of Arts*, vol. viii. (*new series*), p. 85. *London Journal (Newton's)*, vol. x. (*conjoined series*), p. 149.]

A.D. 1836, November 12.—N^o 7221.

PATERSON, GEORGE BERTIE.—“Improvements in the construction of meters or apparatus for measuring gas or liquids.”

These relate to improvements upon the dry gas meter, for which letters patent were granted to Miles Berry, dated A.D. 1833, March 19th. In this case the hollow vessel or chamber is partitioned or divided into two equal sized chambers by a moveable and flexible diaphragm, which is caused to vibrate from one side to the other by the introduction of gas alternately into one or the other compartment. The vibratory movements of this partition or diaphragm are registered by means of a pall and ratchet wheel acting on a registering apparatus. The valves are worked from the centre of the diaphragm by a rod which passes through it, each end of which actuates a lever, one in each compartment, attached to the valves. There are four valves required, namely, an entrance and an exit valve in each compartment. The reversing movement of these valves may be rendered instantaneous by the action of a tumbling weight and trip lever, and they may be retained in their required position while the diaphragm is moving over to the other side by means of another tumbling weight and lever. Other mechanical means may be adopted for this purpose, such as quicksilver, or a leaden bullet contained in a tube. These will travel from end to end of the tube as the valves are opened or closed, always descending to the lowest end of the tube. These valves may be placed side by side or vertically, or otherwise. Such meters may be applied to the purpose of measuring and registering the quantity of water or other liquid in a cool state.

[Printed, 2s. 7d.]

A.D. 1836, December 3.—N° 7243.

SULLIVAN, GEORGE.—“ Improvements in machinery for measuring fluids.”

“ This invention consists in combining the motion of two flexible pistons or surfaces [diaphragms] (acted on by fluids) by means of levers and connecting rods, in order to obtain continuous rotatory motion to a cock or valve through which the fluid to be measured has to pass in order to the quantity being indicated.”

The external chamber is divided internally by a partition into two equal parts; and these two equal parts are again divided each by a flexible diaphragm or piston made of oiled silk or other suitable material, strengthened and protected at their centres by plates of metal. The gas is alternately introduced, by means of a sliding valve having the requisite number of openings, into one side of the diaphragm or the other, while at the same time it escapes from the other side. The oscillating movement of the diaphragms is taken off by suitable arms connected to the axis, and from thence communicated to the index through suitable arms, rods, and a crank wire. The flexible pistons should be so set in respect to each other as not to arrive at the end of their movement at the same time, but that one should be in full action at the time the other comes to the end of the stroke.

[Printed 1s. 1d. See *Repertory of Arts*, vol. viii. (*new series*), p. 262.
London Journal (*Newton's*), vol. xi. (*conjoined series*), p. 370.]

A.D. 1837, February 2.—N° 7294.

COOK, JAMES.—“ Improvements in gas burners.”

These consist in constructing gas burners with “ two or more flat flames in one burner,” by means of slits being cut into the cross piece, whereby the gas in passing through will be more effectually burned than by single bat-wing burners.

[Printed, 3d.]

A.D. 1837, February 6.—N° 7296.

LINNING, MICHAEL.—“ Method of operating for the purpose of converting peat moss and peat turf or bog into fuel, and obtaining from it tar, gas, and other certain substances or matters.”

The mosses or bog should be reduced by means of suitable

grinding and mixing apparatus to a homogeneous pulpy mass, then spread out and cut or moulded into any desired shape. These shapes, say of bricks, are then compressed by suitable means, and dried in a kiln or in the air. From this fuel, when burned, there is obtained as residuary matters certain substances which may be employed as colouring matters, and as substitutes for ivory black, Roman ochre, or English umber. Coke may be made from the same fuel, and tar will be obtained suitable for smearing sheep and other purposes. "By heating the fuel in a close vessel or retort, " gas, ammonia, oil, and materials of which candles may be made, " and which may be used as a varnish, are produced besides the " coke and tar." A strong fuel is obtained by mixing the material " in a high dried state, or in its coke, with its own tar."

[Printed, 4d. See *Repertory of Arts*, vol. xi. (*new series*), p. 177. *London Journal (Newton's)*, vol. xi. (*conjoined series*), p. 347; also vol. xx. (*conjoined series*), p. 139.]

A.D. 1837, May 2.—N^o 7358.

MOLLERAT, JEAN BAPTISTE. — "Improvements in the manufacture of gas for illumination."

The first improvement consists in rendering the mixture of " carburetted matters, and the gases hydrogen or oxide of carbon," an "absolutely permanent" compound. These gases are caused to pass through red-hot coals, and, when at a high temperature, are to be brought into contact with vegetable or mineral oils in a state of vapour. A compound will result, which will not condense when it becomes cool, but retain its luminous properties.

Second, a mode of obtaining and distilling oil and gas from "bituminous schistus," "which exists in vast quantities in England." The Patentee describes the furnaces, retorts, and other apparatus employed by him in preference, and which he had at the above date "actually at work;" other "species or modifications" of apparatus will furnish "analogous results." The retorts, twelve in number, may be placed vertically, and in a circular arrangement, and so arranged that fires may be placed at each end of the retort, and the flame be carried round other retorts or stopped off as required. The necessary degree of heat may thereby be regulated.

[Printed, 1s. See *London Journal (Newton's)*, vol. xi. (*conjoined series*), p. 229.]

A.D. 1837, June 8.—Nº 7387.

KIRKHAM, JOHN.—“An improved mode of removing the “ carbonaceous incrustation from the interior surfaces of retorts “ employed in the process of distilling coal for generating gas.”

This invention consists in “the application of heated air forced “ in a powerful jet or jets into incrusted retorts, for the purpose “ of removing the carbonaceous matters formed and adhering to “ the interior of such retorts as have been employed in the distilla- “ tion of coal for generating gas.” If the retort be kept at a high heat during the action of the air, the incrustation will be readily burned or loosened, so that it may be easily removed by mechanical means.

[Printed, 5d. See London Journal (*Newton's*), vol. xi. (*conjoined series*), p. 236. Rolls Chapel Reports, 7th Report, p. 187.]

A.D. 1837, October 19.—Nº 7447.

TENNESON, HENRI QUENTIN.—(A communication.)—“An “ improved construction of the portable vessels used for contain- “ ing portable gas, and of the apparatus or machinery used for “ compressing such gas therein, and of apparatus or mechanism “ for regulating the issue or supply of gas, either from a portable “ vessel or from a fixed pipe communicating with an ordinary “ gasometer.”

The improved portable vessel may consist “in combining a “ considerable number of small vessels into one compound vessel “ or apparatus, each separate vessel communicating by small pipes “ or apertures with the one next to it, so that a complete com- “ munication is established throughout such compound vessel.” These separate vessels may have (in preference) “the form of a “ cylinder with hemispherical ends,” as being the strongest.

The mode of “compressing” gas into such vessels, consists in generating gas from oil, or other such substance, in a closed retort. A pipe communicates with the receiver, which may be of the compound kind, as above described; and when the requisite cocks are opened the receiver becomes filled with gas, having an equal tension with that in the retort.

The apparatus for “regulating the issue or supply of gas,” may consist of a box of “copper,” “thin iron,” or other such material, in which is placed a diaphragm “made of some light flexible “ material, such as india-rubber cloth,” in preference; the box is

thereby divided horizontally into two parts, the upper part communicating with the atmosphere by holes in the lid, and the lower part forming the gas chamber, which is provided with a feeding and an exit pipe. When the supply of gas to this chamber becomes excessive, the diaphragm is elevated by means of the extra pressure. Attached to the diaphragm is the end of a lever, the other end of which carries a rod and valve, placed perpendicular to the mouth of the induction pipe, and as the diaphragm rises, taking up with it one end of the lever, the other end carrying the valve will be depressed, and the supply of gas thereby cut off more or less completely, as required.

Another mode of regulating the issue of gas, consists in working the induction valve by means of a float ball floating in water. The water is so contained as to act on the principle of a syphon, one end of which (that in which the ball floats), communicating with the gas chamber, and the other with the atmosphere. As the pressure of gas increases in the chamber, the water is depressed, and with it the float, to the float is attached a rod and lever, which works the valve in the usual manner, but self-acting, as required.

[Printed, 1s. 1d. See London Journal (*Newton's*), vol. xiii. (conjoined series), p. 18.]

A.D. 1837, November 2.—Nº 7454.

BURCH, RICHARD.—“ Improvements in manufacturing gas “ from coal.”

These “ improvements in manufacturing gas from coal consist “ in the application or introduction of an inner door plate or “ partition [or its mechanical equivalent] into the body of the “ retort commonly used for the distillation of coal in generating “ gas, which inner door plate or partition is to be placed within “ the retort, just beyond the upright or ascending pipe which “ conveys the gas from the retort as it is evolved from the coal, “ thus acting as a valve or damper; and is designed, in the first “ place, to keep the mouth of the retort and the ascending pipe “ cool; and, secondly, to confine the heat within the retort as “ much as is practicable without causing any improper pressure “ of gas therein. These operations will be found to cause the “ effectual prevention of the choking or ‘ baking-up’ of the “ ascending pipes, usually produced by the carbonaceous incrustation formed thereon from the great heat of the gas and tar “ which arises from the mouth of the retort, and also to cause a

" large portion of the tar which has hitherto passed away to be rendered into gas. This increase of the quantity of gas will vary according to the temperature of the retorts."

[Printed, 3d.]

A.D. 1837, November 4.—Nº 7460.

MIDGLEY, GEORGE DEAKIN, and KYAN, JOHN HOWARD.—“ An improved mode of extracting ammoniacal salts from liquor produced in the manufacture of coal gas.”

This invention consists in adding lime (in preference) to the ammoniacal liquor, submitting the mixture to distillation, and condensing the ammonia driven off by means of an acid. The lime and ammoniacal liquor, in suitable proportions, being introduced into a suitable mixing vessel, provided with agitators, is from thence conveyed into a still provided also with an agitator. It is there submitted to a heat of from 170° to 200° F., and the liberated ammonia is distilled over into a condenser containing muriatic or sulphuric acids slightly diluted. The salts produced are to be crystallized by evaporation in suitable open vessels.

[Printed, 9d. See *Repertory of Arts*, vol. x. (*new series*), p. 11. *London Journal (Newton's)*, vol. xviii. (*conjoined series*) p. 30.]

A.D. 1837, December 9.—Nº 7504.

COOK, BENJAMIN.—“ An improvement in gas burners, commonly called or known by the name of argand burners.”

This consists in drilling the holes in a slanting direction through the sides of the burner instead of vertically, by which means the flame is more thoroughly exposed to the action of the atmospheric air.

[Printed, 3d. See *Repertory of Arts*, vol. x. (*new series*), p. 43. *London Journal (Newton's)*, vol. xii. (*conjoined series*), p. 291. *Mechanics' Magazine*, vol. xxxii., p. 407.]

A.D. 1838, January 11.—Nº 7536.

BACON, HUGH FORD.—“ An improved apparatus for regulating the flow or supply of gas through pipes to gas burners, with a view to uniformity of supply.”

The gas in flowing from the gas holder to the burners is caused to pass through an air-tight vessel or chamber, the lower part of which is partitioned off by an elastic and air-tight diaphragm.

The diaphragm is supported by a convex metal disc resting on a helical metallic spring. As the pressure of the gas increases in that portion of the vessel above the diaphragm, the disc and spring will be depressed, and when the pressure decreases the action will be reversed. This movement is communicated to the entrance valve for the gas through a rod attached at one end to the diaphragm and click, and at the other to a lever which opens and closes the valve as required.

[Printed, 8d. See London Journal (*Newton's*), vol. xiv. (*conjoined series*), p. 98.]

A.D. 1838, January 31.—No 7560.

HEGINBOTHAM, WILLIAM HOLME.—“Improvements in the
“construction of gas retorts.”

“These improvements in the construction of gas retorts consist, firstly, in the introduction of an apparatus into the body of the retort in ordinary use for the distillation of coal, for the purpose of propelling the coal through the retort and discharging the coke from the same after carbonization. This apparatus is composed of a central shaft passing entirely through the retort, around which shaft is formed a worm or screw, for the purpose of dividing the interior of the retort into helical partitions or chambers, and thus more effectually exposing the coal under process of decomposition to the action of the heated surfaces of the retort. And, secondly, in the application of rotary motion to this heliacal worm or creeper, in order to cause it to propel the coal through the retort and keep it in constant motion, thus constituting a self-acting gas generator capable of feeding and discharging itself without the necessity of removing the mouthpiece of the retort, and exposing its interior surface to the action of the atmosphere.” “Attached to these improvements is an apparatus to crush or grind the coal prior to its introduction into the improved retort, as its peculiar construction enables the Patentee to generate gas from” [small or] “pulverized coal, and consequently to produce it at a much less cost.” The feed coal is placed in a hopper provided with a damper, which on being withdrawn allows the coal to drop between the grinding wheels and then into the retort at one end.

[Printed, 8d. See London Journal (*Newton's*), vol. xiii. (*conjoined series*), p. 278.]

A.D. 1838, February 28.—N^o 7581.

MONTAUBAN, HYPPOLITE FRANCOIS, Marquis de Bouffet; and MEDEIROS, JOHN CARVALHO DE.—“Improvements in “the means of producing gas for illumination, and in apparatus “connected with the consumption thereof (being a communica- “tion from a foreigner residing abroad).”

“These improvements consist in collecting the crude or nascent “gas as it arises from the decomposition of the materials in the “ordinary heated retorts into one or more receiving chambers, “passing it through a decomposing chamber or chambers heated “by a separate furnace, or that used for heating the retorts, but “at a much lower temperature than that of the retorts, the interior “of such decomposer being supplied with caloric conductors.” These conductors may be plates, tubes, coils, &c. of metals.

“When oils, resins, tar, pitch, bitumens, schistus, or other such “matters are used for making the gas, we prefer the application “of water or steam in the process; but when making gas from “oils, resin, tar, pitch, or other bituminous matter in a liquid “state, we mix the water” [by means of a rotating beater] “with “such material before placing it in the retort.” By Disclaimer, dated August 24, 1838, the Patentees disclaim that part of the above title included by the following words:—“And in apparatus “connected with the consumption thereof.”

[Printed, 1s. See London Journal (*Newton's*), vol. xiii. (*conjoined series*), p. 185; also vol. xxi. (*conjoined series*), p. 476, for Disclaimer.]

A.D. 1838, April 24.—N^o 7625.

SMITH, SAMUEL WAGSTAFF.—“Improvements in regulating “the heat of furnaces for smelting iron, which improvements may “also be applied to retorts for generating gas.”

This invention relates to self-acting modes of regulating the flow of air or gas through pipes, and consists, firstly, in introducing into the flow pipe, between the blowing cylinder and the furnace, or between the gas-holder and burner, a throttle valve which is opened or shut, more or less, by means of the elevation or depression of a piston working in a cylinder communicating with the flow pipe. As the pressure increases, the piston is elevated, and closes the valve more or less as required. The motion from the piston to the valve may be communicated by means of rods and a lever. The weight of the piston may be regulated by springs of

weights variously applied. Secondly, the valve may be attached to a lever and counter weight, which gives to the valve a tendency to open. As the flow of air increases it blows against the valve, and raising the weighted lever, more or less, closes it as required. Thirdly, the throttle valve may be introduced into the chimney or flue of apparatus where air is heated and there actuated by the expansion or contraction of air or other matter contained in a pipe acting as before by depressing or elevating a piston ; the piston being in connection, by means of rods and levers, with the valve. The temperature of gas retorts may be regulated by using similar apparatus.

[Printed, 8d. See London Journal (*Newton's*), vol. xxi., (*conjoined series*), p. 341.]

A.D. 1838, May 5.—Nº 7632.

COBBOLD, EDWARD.—“ Improvements in the manufacture of “ gas for affording light and heat, and in the application of certain “ products thereof to useful purposes.”

This invention “ consists in combining and applying tar” [in “ suitable quantity] “ with peat, so as to obtain a compound sub-“ stance capable of being used in the manufacture of gas for afford-“ ing light and heat, and it may be used either as fuel to obtain gas “ from coal, or it will itself yield gas in great abundance if put “ into the retort and coal be used as the fuel, or it may be used “ both as fuel and as the substance from which gas is to be “ distilled.” Ground coke may be added to the tar and peat.

Secondly, “ in applying certain products arising in the manu-“ facture of gas ; one is the applying coal tar produced in the “ manufacture of gas in making the above compound, which may “ be used as above, and also as fuel generally where bituminous “ fuel is required ; another is, applying certain products” [the “ residuum from the peat, crushed or ground], “ as paints or pig-“ ments, or in the manufacture thereof.”

“ The residuum obtained by the destructive distillation of the “ substances aforesaid mixed in proportion of one to two, more or “ less, with small coal, and moistened, may be employed to “ advantage in preparing iron in blacksmiths' forges ; and the “ said residuum, if well saturated with water, and laid (in the pro-“ portion of half a peck, more or less, to each bushel of coke) in “ the furnace where iron or other metal or metallic substance is

“ being fused, will, by increasing the heat to a white heat,
 “ materially assist the process ; or it may be ground or pounded
 “ into a coarse powder by means of a mill or rollers, and it may be
 “ used as an excellent manure for agricultural purposes, possessing
 “ the nutritive properties of soot, and on certain soils will be found
 “ equal, if not superior, to bone dust for the increase of agri-
 “ cultural produce.”

[Printed, 4d. Repertory of Arts, vol. xi. (*new series*), p. 368. London Journal (*Newton's*), vol. xvi. (*conjoined series*), p. 288.]

A.D. 1838, June 7.—Nº 7674.

CLEGG, SAMUEL.—“Improvement in gas meters.” These relate to improvements upon the “dry gas meter,” for the invention of which the Patentee obtained letters patent, dated A.D. 1830, October 20th ; that first described consists in heating, by means of a gas flame or otherwise, the gas before it arrives at the interior of the meter, with the view of securing a correct ratio of temperature between the two globes constituting the pulse glasses. The gas thus heated flows through an aperture on to the lowest of the two globes containing the alcohol ; another current of gas, which is not heated, blows upon the upper globe as in the former invention. The action of the heating flame is now regulated by the expansion or contraction of a metallic tube fixed to the top of the heated chamber ; as the heat accumulates in the chamber and tube, the tube expands, and, actuating a lever and rod, partially closes the aperture for supplying the gas to the flame, and *vice versâ*. The flow of gas to the burners is also regulated by a similar means.

[Printed, 10d. See Mechanics' Magazine, vol. xxxviii., p. 65.]

A.D. 1838, June 7.—Nº 7675.

HADDEN, JOHN COOPE, and JOHNSTON, JOHN.—“Im-
 “ provements in warming, in lighting, and in ventilating.”

These relate first, to the manufacture of and the regulating of “candles,” for which see Abridgments on that subject.

Secondly, to “warming, lighting and ventilating,” by causing the “heat of gas or other flame to force currents of air to ascend “into and out of, and to descend within a room or other place,” and consist of a variety of adaptations whereby the burned air may be conveyed by means of pipes to the outside of the building. The wall of the room may be fitted with flues through which a

current of air will be created by enclosing the burned air pipe. Heat without light may be obtained by surrounding the glass chimney of an argand burner with a metallic base.

[Printed, 1s. 2d.]

A.D. 1838, June 27.—N° 7705.

DEFRIES, NATHAN.—“Improvements in gas meters.”

These consist of several modifications of gas meters. The first described consists of an external cylinder containing four quadrants. The upper pair of quadrants rise and fall as they are respectively filled or emptied of gas. A weighted tumbler is attached which regulates the opening and shutting of the valves. The oscillations of the upper quadrants are registered by a registering apparatus.

Second, a gas meter may be constructed by means of two elastic chambers or bags, one of which, by the regulation of the valves, is emptying while the other is filling. The bags require to be gas-tight, and may be made of silk coated with cocoa-nut tallow. Instead of two bags, three may be substituted.

(See Specification and Drawings.)

[Printed, 1s. 2d. See London Journal (*Newton's*), vol. xxx. (conjoined series), p. 88.]

A.D. 1838, July 13.—N° 7734.

MILNE, JAMES.—“An improvement or improvements in apparatus employed in transmitting gas for the purpose of light and heat.”

These relate to apparatus for regulating the flow of gas to the burners. The principle of this invention consists in causing the elevation and depression of the surface of water to open or close the gas supply valve. The gas supply valve is attached to a float which floats in water contained in a double cased vessel acting after the manner of syphon. The entrance pipe for the gas enters at the bottom of the vessel, and rises till it reaches above the surface of the water; the exit pipe is attached to the top of the vessel. As the pressure increases in the vessel the water becomes depressed in the inner compartment, and the float following, depresses the valve and shuts off the gas more or less as may be regulated by the original level of the water in the vessel.

[Printed, 1s. See *Repertory of Arts*, vol. xl. (new series), p. 208.]

A.D. 1838, July 26.—N° 7748.

CROLL, ALEXANDER.—“ Improvements in the manufacture of “ gas for the purpose of affording light.”

These improvements relate, first, to the “ purifying of gas,” by passing it through a mixture of “ five hundred weight of nitrate of soda,” or of “ nitrate of potash ” dissolved in “ two hundred and fifty gallons of water.” “ Hydrosulphuret of soda and nitrate of ammonia ” are thereby formed in the solution.

Second, the “ nitrate of soda or potash ” may be recovered from the above solution when saturated with impurities, and the ammonia and sulphuretted hydrogen driven off, by heating it up to the boiling point. The ammonia may thus be distilled over into a vessel containing acids, and the salt thus formed obtained by crystallization ; or the impure solution may be saturated with muriatic or other acid, which will expel the sulphuretted hydrogen. The remaining nitrate of potash and muriate of ammonia may be separated by crystallization ; or the ammonia may be evolved from the solution by means of slaked lime, and condensed by acids as above.

Third, consists in purifying gas “ from sulphuretted hydrogen ” by affording it a sufficient quantity of “ oxygen ” by any convenient means, “ to render the sulphuretted hydrogen into sulphurous acid.” For this purpose, the Patentee proposes (in preference) to cause the gas to pass through “ nitric acid of the specific gravity of 1·15 diluted with three times its weight of water.” The sulphurous acid so formed may be condensed in water or intercepted by the usual lime purifiers.

[Printed, 3d. See Repertory of Arts, vol. xii. (*new series*), p. 355.]

A.D. 1838, July 28.—N° 7751.

PALMER, GEORGE HOLWORTHY, and PATERSON, GEORGE BERTIE.—Improvements in the mode of preparing, constructing, and adapting certain parts of gas meters.

[No Specification enrolled.]

A.D. 1838, August 30.—N° 7788.

GRAFTON, JOHN.—“ Improvements in the construction of retorts and other machinery for making gas from coal and other substances.”

"Firstly, by employing a waggon or carriage traversing the interior of the retort longitudinally, and passing into a recess or chamber attached to one end of the retort, where the waggon receives a charge of coals from an air-tight hopper placed over the chamber, and, after being filled, delivers the coals in a regulated stratum spread equably over the floor of the retort, and to the tail of which waggon is attached a flap turning on hinges, which flap on being let down will act as a rake or expeller to push the coke out through the doorway of the retort."

Secondly, "in using two pipes, one at each end of the retort, both being open at the same time to carry off the gas, thereby avoiding the speedy furring up of the retort by incrustation."

[Printed, 1s. 7d.]

A.D. 1838, November 10.—N^o 7868.

BACON, HUGH FORD.—"Improvements in the construction of the glass holders, and glass chimneys of gas burners." These consist, first, in forming the glass chimney with a portion of it at the lower end considerably contracted. This chimney stands on a circular rim, which is connected by radial bars with a cylindrical hoop, which rests upon a projecting shoulder of the burner, and is held in position by means of a variety of adaptations; for example, springs may be connected to the gallery cone or to the rim, which will spring out when the narrow part of the glass is depressed, and hold it; or by screwing a cap on, or by turn buckles, or otherwise.

[Printed, 7d.]

A.D. 1838, December 6.—N^o 7898.

NEVILLE, FREDERICK.—(A communication.)—"An improved method or process of manufacturing coke, whereby the sal ammoniac, bitumen, gases, and other residuous products of coal are at the same time separately collected, and the heat employed in the process is applied to other useful purposes." This invention consists, first, in placing any convenient number of gas retorts, which may be of the ordinary form, over a coking oven in such a manner that the waste heat from the oven will generate the gas and other products from the fuel contained in the retorts. The products from the retorts may then be carried off by means of pipes in the usual manner. Six retorts may be suitably placed

over one oven, supported by flat arches, or at each end by resting on the walls.

Second, relates to the application of the waste heat from coke ovens, for the purpose of heating "small coal," contained in a suitable oven till it becomes "half melted, or in a spungy or pulpy state," then in conveying this to suitable moulds in which it is compressed, and thereby becomes solidified, and rendered more useful for domestic and manufacturing purposes.

[Printed, 1s. 8d.]

A.D. 1839, January 17.—Nº 7939.

BACON, HUGH FORD.—"Improvements in apparatus for regulating the flow or supply of gas through pipes to gas burners, with a view to uniformity of supply." The gas in this case is caused to pass through an air-tight box, the lower part of which is divided off by means of an elastic diaphragm; this diaphragm is supported by a metallic plate resting on a spiral screw, which may be adjusted by a thumb-screw underneath. When the pressure of the gas in the box varies the diaphragm and spiral screw are more or less depressed. Attached to the diaphragm and metallic plate is a rod, the other end of which actuates a bell crank lever; to this crank may be adapted two conical valves which are balanced by the one opening inwards and the other outwards, or there may be attached two slide valves working over two inlet openings. As the rod is depressed along with the diaphragm by means of excessive pressure, the conical valves or the slide valves, when used, are closed to a corresponding extent; the gas will thereby be partially shut off, and the desired equilibrium restored. Instead of the spiral wire a bent lever and weight may be substituted. A false bottom, with a hole in its centre to allow the rod to work through, is introduced into the air-tight box immediately above the diaphragm to catch any liquid or deposit from the gas, and so prevent it injuring the diaphragm.

[Printed, 7d. See Mechanics' Magazine, vol. xxxii., p. 97.]

A.D. 1839, March 6.—Nº 7996.

PALMER, GEORGE HOLWORTHY, and PATERSON, GEORGE BERTIE.—"Certain improvements in gas meters."

[No Specification enrolled.]

A.D. 1839, May 8.—N^o 8062.

MANBY, EDWARD OLIVER.—“A new method of manufacturing “gas for the general purposes of illumination.” This “method of manufacturing gas for the purposes of illumination consists “in passing steam into a retort or closed vessel containing anthracite or stone coal, charcoal, coke, or bituminous coal heated” to a lively red heat, “and thereby obtaining a gas or combination of gases applicable to the purposes of illumination.” “The anthracite or other substances when put into the retort ought to be in a state of fine division, not much exceeding in size that of a rough powder. To facilitate the action of the steam the anthracite or other substances are mixed with suitable quantity of a mixture respectively consisting of one part of slackened lime to nine parts of silicious sand, and one part of clay, if the sand does not already contain clay in fit proportions.”

[Printed, Ed. Mechanics’ Magazine, vol. xxxii., p. 173. Inventors’ Advocate, vol. I., p. 211.]

A.D. 1839, June 8.—N^o 8098.

GURNEY, GOLDEWORTHY, and RIXON, FREDERICK.—“Improvements in the apparatus for producing and distributing light.” This invention consists, “first, in any suitable arrangement and construction of pipes or tubes connected with jets or burners, and furnished with suitable stop-cocks or valves whereby a jet or stream of pure oxygen is administered or given to the interior of the flame of either oil, wick, or inflammable gas lamps.” The improved light caused by this action of the oxygen on the interior of the flame is called the “olio-oxygen or bude light.”

“Second, in the arrangement and construction of apparatus or mechanism whereby we are enabled to produce an intermitting, or interrupting, or flashing light to be used as signal lights for railway or telegraphic and naval purposes, either by passing the inflammable gas in bubbles when it is used in connexion with a small fixed continuous light, or the pure oxygen when used in the interior of flame obtained from the combustion of other matters, the pressure of the gas overcoming a column of fluid, and thereby causing pulsation or passing of bubbles before it can escape to the burner or flame; and also the improved apparatus or mechanism whereby we obtain the same effect of

“ interrupting the passage of the gas, either inflammable or non-inflammable, to the fixed or continuous flame, by alternately opening and closing the valves, cocks, or taps of the gas pipes, and thereby causing an intermitting or interrupted light; and also the improved apparatus or mechanism whereby we obtain the same effect by the revolving or moving shade or reflector around the light, as herein-before described.” The cocks or valves are opened and shut, and the revolving shade is caused to revolve by means of suitable machinery.

[Printed, 11d. See London Journal (*Newton's*), vol. xvii. (*conjoined series*), p. 9. Inventors' Advocate, vol. i., p. 307.]

A.D. 1839, June 22.—N° 8125.

HEBERT, LUKE.—(A communication.)—“ Apparatus for producing and communicating artificial light.” This apparatus consists, first, “ in the application to lamps of mechanism calculated to fire by friction, pressure, or percussion, a match connected therewith, and to cause the said match to inflame the wick of a lamp or the jet of a gas burner.”

Second, “ the application to lamps of an indicator, by which the height of the wick in regard to the burner can be ascertained without removing the chimney, globe, or shade thereof.”

A lucifer or other match may be so attached to suitable machinery connected to the lamp capable of being wound up, that on liberating a catch the match will be forcibly rubbed against a rough surface placed near the burner and ignited. The indicator may consist of a circular plate (connected with the button on the rod through which the wick-rack is actuated), marked with the figures 1, 2, 3; placed over this is a pointer, and according as the plate is turned the figure opposite the pointer will indicate the height of the wick.

[Printed, 1s. See Inventors' Advocate, vol. ii., p. 20.]

A.D. 1839, June 22.—N° 8126.

VAL MARINO, JOHN ALEXANDER PHILLIP DE.—“ Improvements in the manufacture of gas, and the apparatus employed for consuming gas for the purpose of producing light.”

The first part of this invention has for its object “ a mode of decomposing tar, oils, and other fatty matters, and also water, whereby a more complete combination of the gases evolved is

" obtained, and consequently a more beneficial result than heretofore has been accomplished." This may be effected by having three retorts heated to a high degree and filled with coke or charcoal. Water in suitable quantities is allowed to flow into the first retort, and the steam and gaseous products thence arising are passed on to and through the second retort, and finally through the third retort, which is the retort that is supplied with tar, &c., for decomposition. "Carburetted hydrogen gas thus manufactured will not require purifying."

Secondly, consists in the mode "of constructing the apparatus [the burner] for consuming gas." The outer surface of the upper part of the burner is "coned," and there is an outer cone which surrounds this, and is carried by the gallery of the glass chimneys. The air passes between this outer cone and the coned burner, and is thereby caused to impinge against and pass through the flame.

[Printed, 1s 11d. See *Repertory of Arts*, vol. xiv. (*new series*), p. 65. *London Journal (Newton's)*, vol. xvi. (*conjoined series*), p. 89. *Inventors' Advocate*, vol. ii., p. 34.]

A.D. 1839, July 3.—N^o 8141.

CRUCKSHANKS, ALEXANDER.—"Improved methods of producing or manufacturing certain inflammable substances, and of applying the heat and light obtained from certain inflammable substances to various useful purposes."

The method first described consists "in the application of the inflammable gas resulting from" the distillation of tar from coal in aid of the said process of distillation" [by burning it under the retort]; and the distillation of tar from a mixture of small caking coal with small coal that does not possess the property of caking, whether such process of distillation is effected "in close vessels, or in tubes or ovens."

Secondly, the mode of obtaining "an inflammable gas from the decomposition of water." For this purpose a current of "steam" is caused to pass into the gas retort while gas is being produced. The steam should be heated so that it will enter the retort at a "red heat," and may be so heated by causing the pipe to pass through the furnace. The heated air from the furnace, and the heated gas from the retort are caused to pass by separate pipes through the water vessel, whereby the water will be heated, and

steam will be generated in sufficient quantity to supply the retort.

Thirdly, consists in "applying the heat obtainable from the combustion of coal tar, and other inflammable substances, existing either naturally in a fluid state, or capable of being reduced to that state by heat, to the generation of steam and other heating purposes." For this purpose the tar or other similar substance may be injected into a red hot furnace upon the surface of balls of baked clay or other such substances. The flame and vapour arising therefrom is caused to pass up between other balls of clay also red hot. The resulting hot burnt air and gaseous products may then be conducted through a tubular boiler for the purpose of generating steam. A fan is provided to force into the furnace sufficient air, which air may have been previously heated by the waste draft.

Fourthly, consists in "applying the heat obtained from the combustion of coal, tar, and other descriptions of liquid fuel, to the expansion of air for the production of motive power." This may be effected by pumping cold air through the furnace supplied with tar, &c., as above described, and causing the heated gases first to mix with some additional air from the pump, and then to pass into a receiver from whence an air engine may be worked, or by causing the heated vapours and gases from the furnace to pass through the tubes of a tubular boiler, into which cold air is pumped. The cold air thus heated may also be applied for motive power.

Fifthly, consists in "applying the heat produced by the combustion of gaseous and liquid inflammable substances to the warming of houses and other buildings, to roasting, and all other purposes now commonly effected by the radiant heat of an open coal fire, and in such manner that the appearance as well as the effect of a common fire may, if desired, be produced." The specification describes several modes whereby a "stove-grate" of any desired form, being filled with incombustible materials, such as pieces of metal, "shells of fire clay," or other similar substances, is heated by "jets of gas" placed underneath, or by "injected liquid fuel," the vapours arising being taken off by suitable chimneys. An effective radiation takes place from the surfaces of such heated bodies.

Sixthly, consists in modes of "increasing the light obtained from substances that are rich in carbon, and to obtain light from gases

“ and vapours that do not contain the proportions of carbon necessary to produce a bright flame.” This may be effected, first, by placing a cage or cone of fine platinum wire (which may be coated with chalk or lime) over the flame so as to enclose it, and to touch the outer surface of the flame. Secondly, by causing ignited jets of inflammable gas or vapour from inflammable substances, duly mixed with atmospheric air, to impinge against a ball of platinum or other suitable substance which will resist heat; or the flame may be caused to pass up through the interior of a cage or shell made of such substances.

[Printed, 1s. 6d. See London Journal (*Newton's*), vol. xx. (*conjoined series*), p. 159. Inventors' Advocate, vol. ii., p. 131.]

A.D. 1839, July 16.—N° 8154.

• HEMMING, JOHN.—“Improvements in gas meters.”

These consist, first, in attaching to the ordinary water meter a supplementary vessel to contain an extra supply of water which communicates with the meter by means of two pipes, one of which is placed near the bottom of the vessel, and the other at the level of the water, when the meter is in proper working order. This vessel is supplied with water from another vessel placed over it. This upper vessel has an opening in its lid whereby it may be filled with water, and the opening can be closed air-tight by a screw; in the bottom of the vessel is another hole, in which is fixed a short pipe reaching down to a little below the proper level of the water in the cistern beneath. If through any cause this level is lowered, the mouth of this pipe becomes bared, and allows the water to flow downward from the closed cistern above. If, on the other hand, the level of the water rises in the lower cistern, and consequently in the meter itself, the excess of water is allowed to escape by a double siphon pipe so placed in the under cistern that its mouth will coincide with the required level of the water.

Secondly, in adding muriate of lime or other salts to the water used to prevent its freezing.

Thirdly, in the application of metallic zinc to protect the brass or other metal parts from corrosion.

[Printed, 5d. See London Journal (*Newton's*), vol. xxii. (*conjoined series*), p. 343. Mechanics' Magazine, vol. xxxiii., p. 491. Inventors' Advocate, vol. ii., p. 182.]

A.D. 1839, July 24.—Nº 8167.

HANSON, JOHN.—“ Certain improved apparatus for measuring “ and registering the quantity of gas, water, or other fluid passed “ through the same.”

[No Specification enrolled.]

A.D. 1839, November 2.—Nº 8253.

CROLL, ALEXANDER ANGUS.—“ Improvements in the manufac-
“ ture of gas, and in converting the salts used in purifying
“ gas, and improvements in the manufacture of ammoniacal
“ salts.”

Firstly, relates to “ the application of the coke taken from the
“ retorts when they are drawn while hot as fuel, in order to
“ obtain the required heat in the furnaces to generate gas.”

Secondly, relates to “ purifying gas from ammonia,” by passing
it through a solution of one hundredweight of chloride of zinc
in forty gallons of water contained in a suitable apparatus inter-
posed between the ordinary condensing vessel and the lime
purifier. The following substances may be substituted for the
chloride of zinc, namely, sulphate of zinc, chloride of magnesium,
sulphate of magnesia, chloride of calcium, chloride of barium.
Sulphate of lime in the dry state may also be applied. When the
salts of lime, magnesia, or barytes are used, it is advantageous to
add “ carbonic acid gas to the coal gas before it passes through
“ these solutions,” in such quantity as will convert the “ estimated
“ quantity of ammonia in the coal gas into carbonate of am-
“ monia.”

Thirdly, consists in evaporating to the point of crystallization,
or to dryness, the “ clear liquor” from the above solutions, and
thereby recovering the ammoniacal salts.

Fourthly, consists in treating the insoluble matter (formed in
the above solutions) with the required acid, and thereby recon-
stituting the salt, which may be used again.

[Printed, 4d. See Inventors' Advocate, vol. ii., p. 232.]

A.D. 1839, December 4.—Nº 8298.

LOWE, GEORGE, and KIRKHAM, JOHN.—“ Improvements in
“ the manufacture of gas for the purposes of illumination.”

“ This invention relates, first, to a mode of combining and
“ working retorts in the manufacture of gas from coal, and in

" such manner that the products alternately of one of two
" retorts shall be caused to pass into and mix with the products
" of the other retorts, by which means, whichever of the two
" retorts has been last charged, the products thereof during the
" early hours of working shall pass into the retort, which, with
" its charge, is in a highly heated state, from its having been
" much longer at work; and the retorts are so connected, that
" by means of a valve and apparatus external of the brickwork of
" the setting of the retorts, that during the time of discharging
" and charging either of the retorts, the gas from the other
" retort shall not pass into the retort with which it is connected,
" and which is being discharged of its contents or charged with
" coal."

The object of "the second part of this invention is, to employ
" upper retorts made of clay and the lower retorts made of iron."
" By this arrangement at those parts of the oven where the greatest
" heat will be found to exist the retorts are made of clay, and at
" those parts where the temperature will be much less, and
" where it will be desirable to conduct the caloric as quickly as
" possible into the retorts, the better conductor, iron, is em-
" ployed for such retorts. Another part of this invention
" relates to a mode of applying heat to retorts during the early
" hours of decomposition, and consists in applying (by suitable
" means) a blast of air into the ashpit of the furnace, the ashpit
" being closed, in order to excite the fire in the furnace, that it
" may continually keep up the heat of the retorts, notwith-
" standing the quick rate at which the heat is taken up and
" carried off by the charges of the retorts during the early part
" of the distillation, and we keep up such blast of air for about
" two or three hours, and then open the ashpit, and permit the
" fire to burn by its ordinary draught."

" Another part of this invention relates to a mode of heating
" retorts in the manufacture of gas, and it consists of an im-
" proved mode of employing gas tar as fuel. In performing this
" part of our invention we mix breeze or small cinder with a
" quantity of coal tar to saturate it, which we charge into one of
" the retorts, and by a pipe we conduct the distilled products
" from such retort to the fire of the furnace which is heating
" that and other retorts in the same ovens."

" Another part of this invention relates to a mode of con-
" structing and working retorts, which are set vertically, or nearly

" so, and so arranged as to be charged at the upper ends, and
 " from time to time drawn at the lower ends, and wherein the
 " fresh charges are constantly descending towards the lower
 " ends; and the novelty consists in so constructing such retorts
 " as to cause the gas evolved from the fresh charges to descend
 " and pass amongst the highly-heated charges, and mix with the
 " gas evolved therefrom."

[Printed, 2s. See *Repertory of Arts*, vol. xiv. (*new series*), p. 193. *Inventors' Advocate*, vol. II., p. 871.]

A.D. 1839, December 16.—Nº 8314.

FAXON, SAMUEL WALTON.—"An apparatus to be applied to
 " the chimneys of gas and other burners, and lamps, to improve
 " combustion."

This consists in suspending a "metallic disc" a short distance above the chimney of an argand lamp. The distance above the mouth of the chimney should be less than half an inch. The disc should be suspended by a clay or porcelain peg, or non-conducting cylinder, to prevent abstraction of heat. The intense heat of the disc will improve the combustion of the gas, and destroy all smoke, &c.

[Printed, 3d. See *Inventors' Advocate*, vol. II., p. 404.]

A.D. 1840, February 22.—Nº 8393.

HANSON, JOHN.—"Improvements in meters for measuring
 " volumes of gas, water, and other fluids, when passed through
 " them; and in the construction of cocks or valves, applicable to
 " such purposes."

These consist, first, in the employment of "naptha, distilled from coal tar," or "coal oil," "coal tar oil," &c., in substitution of water, as the substance used for forming the hydraulic valves in meters. A supplementary small chamber is connected to the side of the meter to receive any overplus that may arise.

Second. The gas meter consists of a gas-tight circular vessel, in which a small suspended gas holder, nearly fitting the interior of the outer vessel, is caused to work up and down, according as the flow of gas is directed into the interior of the gasholder, or into the space above, between the gasholder and the outer vessel. Instead of the lower part of the outer vessel being filled with naphta, &c. for the small gasholder to work in, another vessel

inverted is introduced, of somewhat smaller dimensions, which will leave an annular space only to be filled with naphtha, &c. The interior of this inverted vessel becomes a reservoir to discharge the gas into after it has passed the meter and before it proceeds to the burners, for the purpose of preventing flickering. The space above, and the small gasholder are each provided with two cup hydraulic valves, the suitable consecutive action of which directs the gas into one or other of the chambers as required, and at the same time allows the escape of gas from the other. This necessary shifting of the valves, which must take place suddenly, is effected by a bullet or other running weight, enclosed in a horizontal tube; thus, when the little gasholder has filled and risen to a certain regulated distance, a catch comes in contact with the end of the tube, and tilting it up slightly, causes the bullet to run down to the other end. The effect of which is, through the appliance of suitable levers, to reverse the previous position of the four valves. On the other hand, when the small gasholder becomes depressed to a certain point and empty, it draws, by means of a chain, the tube containing the bullet into its first position, and again alters the valves. The elevations and depressions of the gasholder must be registered in the usual manner.

Third, relates to a water or other liquid meter, and consists of a square enclosing vessel, within which is placed another vessel, divided into two equal compartments by means of a perpendicular partition. This inner vessel is supported on a fulcrum underneath the bottom, and may oscillate from side to side within certain bounds; when one of the compartments becomes filled to a required height the liquid elevates a float, and thereby disengaging a catch, allows the vessel to fall over to one side. In doing so with some force, the exit valve is opened and the water escapes, while at the same time the water pours into the other compartment, fills it, becomes disengaged, and capsizes as before. These oscillations are registered in the usual manner.

Fourth, relates to a slide cock or valve, and consists of a middle piece of wood, provided at each end with a cap of leather, &c. fitting tightly into the barrel; when this is depressed to cover the entrance opening for the liquor, the passage of liquor will be stopped.

[Printed, 1s. 1d. See London Journal (*Newton's*), vol. xix. (conjoined series), p. 238. Inventors' Advocate, vol. iii., p. 148.]

A.D. 1840, March 25.—Nº 8446.

SMITH, HENRY.—“ Improvements in gas burners and lamps.” This invention consists in supporting the “ deflection ” by “ glass ” or by a “ wire frame,” so that the light of the flame under the deflector may radiate and be rendered useful.

[Printed, 6d. See Repertory of Arts, vol. xv. (*new series*), p. 22. London Journal (*Newton's*), vol. xvii. (*conjoined series*), p. 282. Mechanics' Magazine, vol. xxxiii., p. 381. Inventors' Advocate, vol. iii., p. 229.]

A.D. 1840, April 28.—Nº 8486.

WILKINS, WILLIAM CRANE, and KENDRICK, MATTHEW SAMUEL.—“ Improvements in lighting, and in lamps.” These improvements relate chiefly to improvements in oil lamps, viz., to the head of the argand lamp ; to the form of the glass chimney ; to raising and lowering the cotton ; to feeding lamps ; to a concentric wick lamp fixing signal lights ; to the application of moveable lenses to slip on to the glass chimneys of lamps when lights of various colours are desired to be used, or where greater intensity of light is required. Under the fourth head is claimed “ the addition to burners used for the purposes of gas illumination of perforated diaphragms, or any analogous substitutes, “ placed in the inside of the barrels of such burners for the “ purpose of retarding and regulating the flow of gas towards “ the point of ignition.” The steadiness and brilliancy of the light will be thereby increased.

[Printed, 1s. 7d.]

By Disclaimer and Memorandum of Alteration filed June 12, 1841, certain parts are disclaimed and alterations made of that portion of this invention relating to oil lamps ; and under the fourth head are added the following words, “ whether such burners are applied to table lamps for burning compressed gas, “ or to ordinary street lamps.”

[See Mechanics' Magazine, vol. xxxiii., p. 446. Inventors' Advocate, vol. iii., p. 291.]

A.D. 1840, April 30.—Nº 8487.

INKSON, JOHN.—“ Improvements in apparatus for consuming “ gas for the purpose of light.”

These relate to modes of regulating the flow of gas to the burner, and consist, first, in introducing into the gas cock a little cylinder

in which is hung a small valve, which more or less opens or closes the aperture for the gas to flow through according as the pressure of gas behind acts upon it; or a small conical valve may be introduced, which is retained in an open position by a spring and rod. On the end of the rod is fixed a plate facing the entrance opening for the gas, and when the pressure increases the current of gas acting on the plate compresses the spring, and closes the valve to the required extent.

[Printed, 5d. See *Repertory of Arts*, vol. xv. (*new series*), p. 79. *Inventors' Advocate*, vol. iii., page 291.]

A.D. 1840, May 12.—Nº 8509.

MECHI, JOHN JOSEPH.—“An improved method of lighting “buildings.”

[No Specification enrolled.]

A.D. 1840, June 9.—Nº 8535.

SMITH, SAMUEL WAGSTAFF.—“Improvements in apparatus “for supplying and consuming gas.”

This invention consists in heating gas, in any suitable manner, in its progress to be consumed, by means of the flame of gas produced by the burners to which the supply is made. In order to effect this object the gas may be caused to pass through a pipe, which shall be heated in a convenient manner by the argand or other burner before it reaches the said burner, when it will be found that an equal quantity of gas will give more light than before.

[Printed, 8d. See *Repertory of Arts*, vol. xv. (*new series*), p. 84. *London Journal (Newton's)*, vol. xviii. (*conjoined series*), p. 21. *Mechanics' Magazine*, vol. xxxiv., p. 2. *Inventors' Advocate*, vol. iii., p. 389.]

A.D. 1840, July 29.—Nº 8577.

CROLL, ALEXANDER ANGUS.—“Improvements in the manufacture of gas for the purpose of illumination, and for the preparation or manufacture of materials to be used in the purification of gas for the purpose of illumination.

Firstly, consists in passing the gas through a solution composed of “one hundred weight of chloride of manganese” [sulphate of manganese or muriate of iron] “dissolved in forty gallons of water;” or through water charged with sulphuric acid at the rate of one hundred gallons of water to two and a half pounds of acid at the sp. gr. of 1845, or of the corresponding quantity of

muriatic acid of sp. gr. 1165°. When this liquor arrives by means of the condensation of ammonia at the sp. gr. 1170° it should be withdrawn and evaporated; if the solution of a salt has been employed the clear liquor, after subsidence, should be evaporated. The insoluble matter may be reconverted into its original state by dissolving it in the desired acid.

Secondly, after the gas has been thus freed from ammonia it may be further freed from "sulphurated hydrogen" by passing it "through black oxide of manganese in powder, moistened with "water to about the same consistency as the lime usually employed in the dry process." The oxide above named may be revived and used again by heating it red hot in an oven, and stirring and roasting it for some hours. "The same effect may be produced by the application of the oxide of zinc and the oxides of iron, and treated precisely in the same way as above described."

Thirdly, the salt used may be reproduced also in the following manner:—"For every twelve ounces of the dry precipitate [say "from chloride of manganese] take one pound of common salt, "or thereabouts, and after mixing them well together, expose "them for two or three hours in a heat scarcely visible in the "dark in any suitable furnace.

[Printed, 4d. See Mechanics' Magazine, vol. xxxiv., p. 140; and vol. ix., p. 68. Inventors' Advocate, vol. iv., p. 84.]

A.D. 1840, September 10.—Nº 8621.

PARKER, SAMUEL.—"Improvements in apparatus for preserving and purifying oils, and in apparatus for burning oil, tallow, and gas." These relate, first, to an apparatus for preserving and purifying oils, by means of floating the oil on water, and excluding it from air at the same time.

Second, consists in conducting air to support combustion into the glass chimneys of lamps in such a manner that the air is caused to flow against the "wicks," by which the wicks are prevented charring. This may be effected by the introduction of suitable discs or hollow cones, or by the contraction of the glass chimney, which will direct the current of air against the outside of the wicks.

Third, consists in increasing the draft of the glass chimney by means of the addition of a metal top, which will slide up or down in the glass chimney, whereby the extent of the flame may be regulated,

or the same result may be arrived at by screwing the gallery round, in which there is an inclined slot acting on a fixed pin projecting from the tube containing the wick. By this means also, namely, by screwing down the gallery, the lamp may be extinguished.

Fourth, relates to a mode of constructing "fountain lamps."

[Printed, 1s. 3d. See Mechanics' Magazine, vol. xxxiv., p. 248. Inventors' Advocate, vol. iv., p. 181.]

A.D. 1840, September 10.—N^o 8624.

DELBRÜCK, CHARLES.—"Improvements in apparatus for applying combustible gas to the purposes of heat."

The improvement described, first, consists in passing a tube containing air through a tube containing "gas," or hydrogen gas, and using the heat produced by the combustion of the two for soldering purposes, or for heating a "copper bit" to be used for the purpose of soldering. The tubes are passed down the handle of the instrument and supplied, respectively, with gas and air, under sufficient pressure through the means of flexible tubes.

Second, relates to modes of obtaining a series of jets of flame for heating an extent of surface. This may be effected by having a large simple flame of gas, into the body of which is introduced numerous jets of air, when each jet of air will produce a flame, the heat of which will be more or less intense according to the degree of pressure to which the air is subjected; or an air pipe perforated with many holes may be passed into a larger gas pipe, through which gas flows. When air is forced through the perforations, and the gas ignited, great heat will be obtained, which may be applied to heating boilers, &c.

[Printed, 7d. See Repertory of Arts, vol. xvii. (*new series*), p. 83. Mechanics' Magazine, vol. xxxiv., p. 250. Inventors' Advocate, vol. iv., p. 181.]

A.D. 1840, November 28.—N^o 8728.

PALMER, GEORGE HOLWORTHY, and PERKINS, CHARLES.—"Improved constructions of pistons and valves for retaining and discharging liquids, gases, and steam."

The improved piston is not made circular, but of an "elliptic" form, and therefore fits tight into the cylinder in an angular or slanting direction. The rod is secured to an adjustable knuckle or joint attached to the piston on a line with its major diameter, and

at some distance from the minor diameter, and "consequently of the cylinder or barrel, such distance being regulated as may be practically required, with reference to the difference of area of the piston on each side of the minor diameter." When this piston is caused to descend the unequal pressure on both sides causes it to assume nearly a perpendicular position, and admit of the passage of the gas or liquid. The "elliptic valve" is on a similar construction, and is supported by an axle. By providing a cylinder with a piston and a valve, both so constructed, an efficient pump may be formed.

The "double or balancing valve" consists in forming two apertures through a piston or frame, one of which shall be larger than the other, both being provided with a valve to fit tight. The valves are placed on the opposite sides of the frame, but are connected together by a piece which works upon a joint. The power required to open them consists of the difference of their respective areas multiplied by the pounds of pressure acting upon them.

[Printed, 7d. See London Journal (*Newton's*), vol. xix. (*conjoined series*), p. 438. Mechanics' Magazine, vol. xxxiv., p. 463. Inventors' Advocate, vol. iv., p. 373. Engineers' and Architects' Journal, vol. iv., p. 335.]

A.D. 1840, December 16.—Nº 8739.

BOTTEN, CHARLES.—"Improvement in gas meters." This consists in attaching to a meter a chamber communicating with the meter by an opening, into which chamber the necessary supply of water may be introduced by means of a pipe; the chamber being also supplied with an overflow pipe to lead off any excess of water, and thereby maintain the level of the water at a uniform height.

[Printed, 5d. See London Journal (*Newton's*), vol. xxiii. (*conjoined series*), p. 354; vol. xxiv. (*conjoined series*), p. 66. Mechanics' Magazine, vol. iii., pp. 239 and 381; and vol. xxxiv., p. 449. Inventors' Advocate, vol. iv., p. 405.]

A.D. 1840, December 23.—Nº 8752.

WALTHER, DAVID.—(A communication.)—Improvements in the methods of purifying vegetable and animal oils, fats, and tallow, in order to render those substances more suitable to soap making, or for burning in lamps, or for other useful purposes, part of which improvements are also applicable to the purifying of the mineral oil or spirit commonly called petroleum or naphtha, or

coal oil, or spirit of coal tar. These improvements consist in passing "high pressure steam" through the substances mentioned above, and condensing the products of distillation. The high pressure steam is passed through such substances contained, in suitable vessels in a divided state, and for a sufficient length of time, and the products may be condensed in suitable condensers. Such substances will thereby be greatly purified and deprived of bad smell, and the distilled products may be separated according to their qualities, and applied to useful purposes.

[Printed, 11d. See London Journal (*Newton's*), vol. xxiv. (*conjoined series*), p. 179. Mechanics' Magazine, vol. xxxv., p. 12. Inventors' Advocate, vol. v., p. 5.]

A.D. 1840, December 23.—Nº 8754.

BAKER, JOSEPH.—"Improvements in gas meters."

[No Specification enrolled.]

A. D. 1841, February 18.—Nº 8850.

NOONE, GEORGE EDWARD.—"Improvements in dry gas-meters."

The meter here described consists of a chamber divided into two compartments by a flexible diaphragm, the oscillations of which from one side to the other by the alternate introduction of the gas into one or other of the compartments, gives the measure of the gas, and the means of registering it. A jointed lever is attached to the centre of the diaphragm, and is moved to and fro by the action of the diaphragm, and attached to the lever is a weighted cam or tumbler which falls over, when it passes beyond a vertical position by means of its own gravity, and reverses the direction of the gas as regards both the inlet and outlet pipes. The cock used for this purpose is a four-way cock of a particular construction. The diaphragm is formed of a hemispheroidal figure of suitable flexible and gas-tight material.

[Printed, 10d. See Repository of Arts, vol. xvii. (*new series*), p. 336. Mechanics' Magazine, vol. xxxv., p. 220. Inventors' Advocate, vol. v., p. 134.]

A.D. 1841, March 15.—Nº 8877.

DOCKREE, JOHN.—"Improvements in gas burners."

"These consist, first, in drilling two (or more) holes in the centre of the top iron plate obliquely, and then drilling two (or more) holes, one on each side of the centre ones at right

“ angles.” The effect is to cause the flames from the oblique holes to impinge upon that from the others, and to elongate the flame, whereby straight gas chimneys may be used.

Secondly, “in the use of a cone to go inside of the glass holder, “ having one or two rows of holes perforated through the cone to “ admit the atmospheric air, and thereby make the combustion “ more complete.”

Thirdly, “in brazing or fastening on the top of the burner “ [argand] a blank plate of metal, then drilling the holes for the “ gas to pass out. The centre plate should be drilled with six or more holes to admit a sufficient and regulated quantity of air to pass up for the combustion of the gas.

Fourthly, “in adapting circular caps or plates perforated with “ holes, and fitting them on to burners now in use.”

[Printed, 6d. See Mechanics' Magazine, vol. xxxiv., p. 413. Inventors' Advocate, vol. iv., p. 326.]

A.D. 1841, March 16.—N° 8883.

LOWE, GEORGE.—“ Improved methods of supplying gas under “ certain circumstances, and of improving its purity and illuminating power.”

This invention consists, “first, in the application of mechanical “ means for giving a power of moving gas meters beyond what is “ produced by the flow of gas through them.” This power may be given by means of a water wheel, by a weight wound up or otherwise.

“ Secondly, in the mode of better adapting gas meters by increasing their surfaces;” this may be effected by placing around the circumference a rim or covering which will take up the purifying liquor and thereby expose more surface to the gas.

“ Thirdly, the application of alkaline solutions in gas meters, “ for the purpose of purifying the gas.”

“ Fourthly, in the application and use of sponge or other suitable material, and also the use of shallow trays containing caustic alkaline solutions, which by their extended surfaces, the gases is further purified from sulphuretted hydrogen and carbolic acid, and when charged with a dilute acid will also take up the ammonia and its compounds.”

“ Fifthly, in the application and the use of sponge or other suitable material, and the use of shallow trays charged with naphtha or other volatile hydro-carbonaceous liquids for increasing

“the illuminating power of coal gas.” The gas on its way to the burner is caused to pass through a small chamber in which a sponge saturated with naphtha is placed.

[Printed, 1s. 2d. See *Repertory of Arts*, vol. xvi. (*new series*), p. 268. *London Journal (Newton's)*, vol. xxii. (*conjoined series*), p. 15. *Mechanics' Magazine*, vol. liii., p. 285. *Inventors' Advocate*, vol. v., p. 196. Extension granted for five years, see “*Times Newspaper*,” January 12th, 1855.]

A.D. 1841, March 25.—Nº 8902.

GURNEY, GOLDSWORTHY.—“Improvements in the production and diffusion of light.”

These improvements consist, first, in improving the purity and increasing the illuminating powers of coal gas by causing it to pass on its way “from the gas main to the burner or burners” through a mixture of the following ingredients dry or slightly moistened, placed in a vessel similar to a dry lime purifier in preference, viz., five parts muriate of zinc, two parts subacetate of lead, two parts chloride of baryta, four parts sulphate of manganese. The muriate of zinc may be used alone or mixed in various proportions with the other ingredients.

Second, consists in applying to lamps or burners reflectors, in such a manner that they shall be placed “intermediate of the length of the flame,” whereby the light from the upper portion of the flame will be diffused upwards, while that proceeding from the lower portion will be diffused downwards.

Third, consists in the application of a “refracting zone” placed above the reflectors. “This refractor consists of a cylinder of glass cut on the outside into prismatic projecting rings, at such angles as to direct the light in the desired directions.”

Fourth, in forming a gas burner by perforating with holes concentric rings of tubing.

Fifth, in forming the chimney glass of a conical form, and in the application of another cone placed under the reflectors.

[Printed, 7d. See *Repertory of Arts*, vol. xvii. (*new series*), p. 71. *London Journal (Newton's)*, vol. xxi. (*conjoined series*), p. 884. *Mechanics' Magazine*, vol. xxxv., p. 304; and vol. xxxvi., p. 419. *Inventors' Advocate*, vol. v., p. 213.]

A.D. 1841, April 20.—Nº 8928.

BARKER, JOSEPH.—“Improvements in measuring aeriform or fluid substances.”

This invention consists in the use for the measurement of gas or fluids of a hollow cylindrical vessel provided with a moveable

piston and rod, resembling a horizontal steam engine cylinder in form. The gas, &c., is admitted alternately on one side of the piston, and on the other by valves which at the same time connect the pipes to entrance or exit passages as required. These valves are reversed by the movement of the piston, assisted by a vibrating weighted lever; suitable side links provided with stops or studs, connect the piston rod to the valves. The motion of the piston is taken off for the purpose of counting by means of a double toothed rack attached to it working into the first wheel of the index apparatus. In some cases the to-and-fro motion of the piston may be assisted by clockwork.

[Printed, 9d. See London Journal (*Newton's*), vol. xx. (*conjoined series*), p. 106. Mechanics' Magazine, vol. xxxv., p. 364. Inventors' Advocate, vol. v., p. 278.]

A.D. 1841, April 27.—N° 8941.

DE CHARLIEU, ANDRE DROUOT.—(A communication.)—“Im-
“ provements in preparing matters to be consumed in obtaining
“ light, and in the construction of burners for burning the
“ same.”

These consist, first, in mixing essential oils, such as “oil of tur-
“ pentine at 75°,” or “naptha,” as examples, with spirits, such as
“ hydro-lignus spirit,” at 95°. These are to be mixed together
and distilled. The product is to be burned in a lamp after the
manner of gas.

Second, the lamp used for the above purpose may be of any
suitable form with a tube, containing the wick screwed into it.
The wick is raised in the tube till it nearly approaches the burner.
On lighting this lamp the end of the burner is heated by a hoop
covered with cotton, which is dipped into some inflammable liquid
and applied to the tube till the liquid on the wick is volatilized
and ignited. On the top of the burner and surrounded by the
flame, is placed a stem which conducts downwards sufficient heat
to continue the volatilizing of the liquid from the wick. Instead
of using a wick the level of the liquid in the lamp tube may be
nicely regulated so as to maintain a proper level for volatilizing.

[Printed, 7d. See London Journal (*Newton's*), vol. xxi. (*conjoined series*), p. 191. Mechanics' Magazine, vol. xxxv., p. 383. Inventors' Advocate, vol. v., p. 291.]

A.D. 1841, June 17.—Nº 8989.

SIMPSON, ALEXANDER HORATIO, IRVIN, PETER HUNTER, and IRVIN, THOMAS EUGENE.—“An improved mode of producing light, and of manufacturing apparatus for the diffusion of light.”

This invention consists, first, “in directing a stream of oxygen gas at an [upward] angle across a flame proceeding from pyro-ligneous spirit, or any aetherial spirit, rising in a tube with two appertures bulbed at its upper end, such bulb being filled with cotton wool or other like substance, or rising in a tube cut off at its upper end in a slanting direction, thus producing two gases [the stream of oxygen passing through the spirituous vapour], and causing the two gases thus produced to impinge upon a piece of lime, or earth containing lime, and placed in a receptacle furnished with a spring below, friction roller above, and revolving rod; and a cap to place over the lime,” when not in use. A fresh surface of the lime is thereby presented to the flame.

Second, relates to the making of reflectors of various forms by precipitating metal through galvanic agency upon a matrix of the required form, and to varnishing such reflectors when made.

[Printed, 10d. See Mechanics' Magazine, vol. xxxvi., pp. 45 and 289.]

A.D. 1841, July 7.—Nº 9021.

McNAB, ANDREW.—“Improvements in the construction of meters or apparatus for measuring water or other fluids.”

The meter here described, consists “of a circular drum, provided with a stop or stationary division, and a vane or blade which moves on the centre.” The “stop” and the “vane” are packed to make them water-tight. A slide valve admits the fluid to be measured, alternately to each side of the vane, which is forced round by the pressure of the fluid. When it arrives at or near the stop, a reversing rack motion, actuated by a weight, reverses the slide valve and turns the water or fluid into or on to the other side of the vane, and thereby reverses its motion. The contents of the circular drum is the meter, and the number of oscillations or strokes of the vane are registered by suitable apparatus. The measured or meted fluid flows out by a pipe provided for the purpose.

Printed, 6d.]

A.D. 1841, July 15.—N^o 9030.

PECKSTON, THOMAS, and LE CAPELAIN, PHILIP.—“Im-
“ provements in meters for measuring gas and other aeriform
“ fluids.”

These consist, first, in constructing a meter with two reciprocating chambers or compartments enclosed within an outer casing. Each chamber is provided with an entrance and exit pipe for the gas, which are opened and closed in a self-acting manner and at the proper times, by means of slide valves, actuated by the rising and falling of the chambers as they are filled or emptied of gas. The charging of the valves is effected suddenly, by the action of a tumbler movement.

Second, relates to a dry rotary meter. In this case the gas is introduced by a rotary valve, forming the rotating centre of the apparatus. The valve has a corresponding number of inlets and outlets for the gas to the number of the rotating compartments or chambers of the meter; these are enclosed in a suitable casing. The working of this meter is effected by “collapsing the ex-
“ pansible chambers of the rotary dry meter by means of rods
“ connecting the compressors of the opposite chambers, so that
“ the gas from one chamber shall be expelled by the act of filling
“ the other chamber, and from the gravity of the descending and
“ lower empty vessels, and the levity of the ascending and upper
“ filled vessels, a rotary movement is produced, by which the
“ induction and exit valves for the passage of the gas are opened
“ and shut.”

Thirdly, relates to a “dry reciprocating meter,” and consists of
“ two chambers, which are alternately collapsed and expanded by
“ compressors and rods, in a similar manner to those described
“ under the second construction, and by the action of which the
“ valves for the entrance and exit of gas are worked.” One part
of each chamber is formed of rigid material, and the collapsing
part forms, as it were, the mouths of two separate bags; as the
gas enters one compartment or bag, the collapsing part is extended
and in so doing pushes in or collapses, by means of a connecting
rod, the other bag, and empties it of gas.

Fourthly, “relates to the rotary action of the central inlet and
“ outlet valves, which is produced by sliding racks acting upon a
“ toothed wheel connected with the valves, the movements of the
“ racks being produced by the expansion and contraction of the

" chambers of the meter, through which the volumes of gas
" pass."

.. The oscillations or revolutions, as the case may be, of such meters are indicated and registered by suitable apparatus.

[Printed, 1s. 10d. See Mechanics' Magazine, vol. xxxviii., p. 113.]

A.D. 1841, July 21.—Nº 9034.

PHILIPPI, FREDERICK THEODORE.—" Improvements in the production of sal ammoniac, and in the purification of gas for illumination." (A communication.)

The object of this invention, first described, consists in purifying coal gas, by taking from it the "ammoniacal substances" with which it is combined, as also "naptha or napthaline," "hydro-sulphuric acid, carbonic acid, sulphurous acid, hydrocyanic and hydro-sulphocyanic acids, &c." by means of the chemical action of a "saline metallic solution, for instance, of manganese, iron, zinc, copper, lead, antimony, &c." A solution of "sulphate, or chloride of manganese" at 20° Beaumé is preferred. The apparatus used may consist of three vessels, placed so as to be elevated the one higher than the other, each containing the required liquor, and worked by agitators. The gas is caused to pass through the first or least pure, and on through the others, after the manner of Wolfe's bottles. The liquors, when desired, may flow through pipes from the purest cistern towards the least pure. " This process is also applicable for removing the ammoniacal substances which are disengaged during the distillation of bones or other animal substances, and all such as produce ammonia by the action of heat."

Secondly, consists in acting upon such ammoniacal waters by means of lime and distilling off the ammonia. These vapours are conducted into a vessel containing lime, and onwards into a second vessel containing alkali, at a strength above 220°, and lastly, through an apparatus resembling "Wolf's bottles." The ammonia in a state of liquid or gas may be converted into the sulphate, hydrochlorate, or carbonate, by causing these acids in a liquid or gaseous state, to combine with it.

[Printed, 9d. See London Journal (*Newton's*), vol. xxii. (*conjoined series*), p. 364.]

A.D. 1841, September 4.—Nº 9060.

HOMPESH, THEOPHILE ANTON WILHELM COUNT DE.—" Improvements in obtaining oils and other products from

" bituminous matters, and in purifying and rectifying oils obtained from such matters."

These relate, first, to obtaining oils of different qualities by distilling "schiste or clay slate," in a retort. The retort used for this purpose should have at one end a hopper, to contain the schiste, capable of being closed by dampers, and at the other a box to contain and cool the exhausted material. The retort is fitted up internally with an archimedean screw, for the purpose of pushing the charge forward from the cooler to the bottom end of the retort. The retort is also provided with three outlet pipes, communicating with separate condensers. By the application of 100 degrees Reaumur, of heat the first, "an essential oil" will be obtained and condensed in its own condenser; with 200 degrees of Reaumur, "an intermediary or fat oil" is obtained; and by the application of a red heat, a third or "thick oil" is driven over into its separate condenser.

Secondly, relates to obtaining oil from "asphalt," and consists in a modification of the retorts employed. The retorts used for this purpose should be small in diameter and of considerable length, and then may be fitted up in groups of five. Each retort should be provided with two outlet pipes, the first proceeding from the upper part of the circumference of the retort, to allow of the exit of the vapours of the "essential oil," and the second proceeding from the lower part of the retort to admit of the escape of "the vapour containing thick oil with tar." To obtain "essential oil," a degree of heat equal to 130° R. is required, and for the "thick oil," about 250° R. The "thick oil" may be subjected to distillation, when the "intermediary oil" and a "fine tar" will be the products.

Thirdly, relates to a closed apparatus, containing many shelves or horizontal divisions, perforated with small holes, through which the "fat" or thick oil is allowed to percolate downwards from shelf to shelf till it reaches the bottom, while at the same time a current of steam, at a pressure of three atmospheres, is passed upwards. The effect of this is to drive over to the condenser "any essential oil that may remain," and to deprive the fat oil of any "empireumatic smell." The oil thus prepared (and after filtration), is ready for "application to all kinds of machinery."

Fourthly, the "essential oil," above referred to, may, by redistillation, at a regulated temperature, be separated into "different kinds of essential oils," according to the degree of heat employed.

Such oils are suitable for “dissolving caoutchouc, the manufacture “of varnishes,” &c. The “tar” existing in the oils so distilled may be “carbonized” by the addition of sulphuric acid, heat, and by means of agitation; and when the mixture has rested for some time, the “essential oil” is drawn off, washed with fresh water, and finally “whitened” and deprived of bad smell by means of “caustic potash lees.”

Fifthly, “the ammoniacal water, (obtained as a product), may “be used in the manufacture of ammonia.” The “acidulated tar” may be made into “sulphate of soda.” The residue in the retort from the schiste may be treated with acid, to remove the pyrites, then washed with water, and finally roasted again in the retort, when it (as well as the direct residue from the asphalt), will become “most powerful manure,” and a “dissensor,” and has other applications.

By Disclaimer, inrolled 16th July 1842, the following amendment is made to the specification, viz.—“I substitute the terms “‘bituminous schists, shales, or slates, or other rocks or minerals “‘containing bitumen or bituminous substances,’ in every part “of my said specification for the term ‘schiste or clay slate,’ and “I also substitute the terms ‘solid and other bituminous sub-“stances, such as mineral pitch, mineral tar, and naptha,’ in “every part of my specification, for the term ‘asphalt.’”

[Printed, 1s. 4d. London Journal (*Newton's*) vol. xxii. (*conjoined series*), p. 369. Mechanics' Magazine, vol. xxxvi., p. 254.]

A.D. 1841, September 4.—Nº 9062.

GRAFTON, JOHN.—“An improved method of manufacturing “gas.”

This invention consists, first, in manufacturing gas in what are called “double retorts.” These retorts are built of fire-brick in the form of an oven, and are divided into halves by means of central transverse divisions. Each retort so divided is provided with a furnace at each end.

Secondly, “in increasing the heat of such retorts by the application of a heat retaining arch.” The arch is thrown over the retort and causes the heat to be retained.

Thirdly, “in passing the gas through a decomposer either “detached or combined with the retort.” The “decomposer” may consist of a retort divided by longitudinal brick partitions, and by smaller transverse partitions filled with burning coke, and

heated by a furnace fire. In the partitions are left openings, whereby the gas from the retorts may be conducted or drawn backwards and forwards through the hot coke by means of an exhausting apparatus.

Fourthly, in the application of an exhausting apparatus to the decomposers, "together with the wire gauze guard interposed between the exhausting apparatus and the pipes, to prevent accidents from ignition;" the "exhausting apparatus may in preference consist of three small gasometers acting after the manner of the common sucking pump, which are elevated alternately by means of crank rods and levers, and depressed by means of their own weight.

The Patentee proposes to arrange the pipes and valves connected to the retorts in such convenient manner that the gas liberated from one end of any retort during the first three hours after the retort has been charged shall be caused to pass through the decomposer, and that during the remainder of the time occupied with a charge the gas shall pass on to the exhauster direct.

[Printed, 2s. 2d. See Mechanics' Magazine, vol. xxxv., p. 399; and vol. xxxvi., p. 465. Inventors' Advocate, vol. v., p. 309.]

A.D. 1841, September 8.—N° 9070.

HEBERT, LUKE.—(A communication.)—"Improvements in the apparatus and materials used in the manufacture of gas for illumination, and in the apparatus for burning the same."

These improvements relate, first to an arrangement of apparatus whereby the coal is introduced into the retort when desired, and when the retort is at work, by means of a hopper provided with a slide bottom, which may be drawn out or in by means of a screw; and in the adaptation of a rake introduced through a stuffing box on the end of the retort, whereby the coal may be broken up, and the consumed coke discharged at the other end of the retort into a box, the lower end of which may be inserted in water, and the process may thus be made continuous; as also to the application under the retort of a "fire tube," through which the gas from the coal, (as well as gas from oil of tar or other fatty liquid matters which may be introduced) is passed and thereby purified by the decomposition of the vapours into carburetted hydrogen.

Secondly, to a self-regulating valve, which will close the valve by the excessive pressure of the gas. The valve is suspended from

an impervious diaphragm by a rod and pentagraph motion, and when the diaphragm is elevated by the pressure, the pentagraph projects downwards, the valve, &c., closes the aperture.

Thirdly, to a "receiver for condensed gas," forming the body of a portable gas lamp. This receiver is a "spherical vessel of rolled " lead or sheet iron, or other suitable metal. Segments of cloth " coated with caoutchouc are applied one over the other to the " sides of the vessel in such a manner as to form break joints, " and between every three layers of segments are applied [layers] " of tea lead or lead paper." The external casing of the lamp is made to enclose this vessel.

Fourthly, to a portable "gasometer." The "bell" and "trough" of this gasometer are made of "water-tight cloth," supported by rings and circular framing.

Fifthly, to "burners." A small piston made of cork is introduced into an enlarged part of the tube of the burner, the rising and falling of which by alterations in the pressure of the gas, regulates the supply to the burner. The aperture at which the gas is burnt is a very fine circular slit. A cone is placed to direct the air on the gas as it burns; and a chamber with partitions is introduced to distribute the gas before reaching the burner.

Sixthly, relates to "cocks for regulating the flow of gas" or liquors. These cocks show various modes of drilling the "plug" of the cock transversely, and also longitudinally, whereby the gas or liquor will escape as usual, or at the end of the plug, or at both places at the same time. The Patentee proposes to "tin" the interior of such cocks to prevent oxidation; to apply cork stuffing, and to provide each cock with an "adjusting nut."

Seventhly, relates to constructing flexible pipes or tubes for the distribution of gas in buildings. These tubes are made of helical iron wire coated with a layer of lead, then with cloth saturated with caoutchouc, and with a layer of lead paper interposed.

The Patentee claims, lastly, the employment of spent tanner's bark, and of the grounds of coffee as materials for furnishing gas for the purposes of illumination.

[Printed, 2s. 9d.]

A.D. 1841, October 14.—N^o 9118.

NEWTON, WILLIAM.—(A communication.)—"Improvements " in engines to be worked by gas, vapour, or steam."

This invention consists, first, in using the elastic force of the gas vapour arising from "ether or volatile liquors" heated by means of hot water, to produce motive power. The volatile liquor is put into a suitable boiler which is enclosed in another boiler containing hot water, and heated by fire, both being provided with suitable valves, pipes, &c. The gaseous vapour is conducted by means of a pipe to the cylinder of an engine, which it works after the manner of steam. The exhaust vapour is conducted to a suitable condenser provided with a large cooling surface, where it is condensed again into a liquid by means of cold water, from whence it is pumped back into the heating boiler to be again converted into vapour. In some cases the gaseous vapour from the volatile liquid may be allowed to escape from the cylinder into the atmosphere.

Second, relates to an improved stuffing box to be used in such engines, and consists in surrounding the usual stuffing box of the piston or other moving rod with a small chamber, through an opening in the lid of which the rod passes, the opening being provided also with a stuffing box. The space left between is filled with oil at a considerable pressure by means of a force pump, and conical pieces wrapped round with leather are added to the stuffing boxes so as effectually to prevent leakage of the volatile vapour.

The cylinder may be oiled from this chamber by a valve contained within the chamber, but worked from the outside by a handle attached to an axis which passes through the side of the chamber. The spindles of valves or cocks used to confine volatile vapours may also be provided with the improved oil chamber stuffing box.

[Printed, 1s. 1d. See Mechanics' Magazine, vol. xxxvi., p. 332.]

A.D. 1841, November 2.—Nº 9136.

BYNNER, JEREMIAH.—"Improvements in gas burners."

These consist in "forcing the air necessary for the combustion" "of the gas to divide itself into small jets or filaments before" "entering the chimney glass, or the interior of the burner" "[argand]."

"That portion of the air which is necessary for combustion by" "passing through the centre of the burner, is made to pass" "through a cylinder or piece of other form of metal, in the sides" "of which are perforated a number of small holes, through which" "alone the air can enter; and the air which is necessary for com-

" bustion, by passing to the exterior of the flame, is made to pass through a plate serving as a glassholder for the chimney glass, in which are also perforated a number of small holes through which alone the air can pass." The principle of this invention may be applied to other burners than argands.

[Printed, 6d. See London Journal (*Newton's*), vol. xxviii. (*conjoined series*), p. 257. Mechanics' Magazine, vol. xxxvi., p. 382.]

A.D. 1841, November 13.—Nº 9157.

DODDS, ISAAC.—"Improvements in the modes or methods of supplying gas for the purposes of illuminating towns and other places."

These relate to modes of causing gas to flow through pipes. The Patentee proposes to apply the power so that it will act as an exhauster, and not as a forcer or compressor of the gas in the pipes, whereby smaller pipes may be used.

The apparatus first described consists of a circular "fan," which may be employed as an exhauster or propeller.

Second, consists of a cylindrical tank containing water, in which an apparatus resembling an inverted small gasholder, is pumped up and down by means of a rod and rotating crank. The mouths of the entrance and exit pipes proceed through the bottom of the tank, and rise above the level of the water, and are supplied with reverse acting valves.

Thirdly, consists in forcing or drawing gas by means of an archimedean screw fitted in a revolving barrel and worked in a tank of water.

Fourthly, relates to modes of regulating the flow of gas to a burner or burners. This may be effected by introducing into the pipe or into the cock itself a conical valve and seating, which is kept open by an adjustable spring; attached to the spring is an elastic diaphragm, the pressure of the gas upon which depresses the spring and closes the valve more or less as required. The action of an elastic diaphragm to open or close the valve and thereby regulate the flow of gas, may be variously applied, but with the same result.

[Printed, 1s. 3d. See London Journal (*Newton's*), vol. xxii (*conjoined series*), p. 195.]

A.D. 1841, December 9.—Nº 9173.

HENDERSON, ROBERT.—"Improvements in apparatus for heating and lighting apartments, and for other like purposes."

This invention relates, firstly, to an improved "stove" to be heated by fire

Secondly, to "oil lamps," and,

Thirdly, consists in supplying lamps of suitable form with air heated by suitable means, and conveyed through a pipe or pipes to the burner for the purpose of "animating combustion." "Due means must be taken to prevent any admission of the surrounding cold or atmospheric air into the lower part or parts of the lamps." Oil or gas lamps may be so fitted with a warm air apparatus.

[Printed, 1s.]

A.D. 1841, December 21.—N^o 9195.

NEWTON, WILLIAM EDWARD.—(A communication.)—"Improvements in lamps and burners, and in the means of supplying air and heat thereto for the support of combustion."

This invention relates to that class of lamps, burners, and wicks, in which hydrocarbons and other oils capable of being vaporized at certain temperatures are first converted by means of heat into gas or vapour, and then burned in that form. The principle of the lamps herein described consists of a reservoir, to contain the hydrocarbon or other oil, capable of being closed; communicating with this by means of a small pipe is a closed cup, into which the oil flows to the same height as in the reservoir. The upper or empty parts of the reservoir and cup also communicate by means of a pipe. From the upper part of the cup proceeds a small bent pipe provided with a jet, through which the vapour escapes for combustion. The jet of burning vapour is directed over the top of the cup, which thus becomes sufficiently heated to volatilize the requisite quantity of oil to continue the combustion. Various forms may be given to such an apparatus. By this means considerable pressure may be put safely upon the vapour so as to cause it to issue with force; but this pressure may be obtained also by mechanical means, or by a column of liquid.

The heated cup should be enclosed in a suitable jacket provided with air holes, and the air used for combustion or part of it is caused to pass between the jacket and heated cup. The air holes are used to regulate the quantity of air so heated, and thus adjust it according to the volatility of the oil employed. The burner may have one or more apertures for the issue of the vapour, or it may be formed like an argand burner, in which case the supply of

air comes direct up the centre in the usual manner, or the air may be heated by protecting jackets. The volatilizing power of the jet may be increased by increasing the thickness of the metallic part of the cup, or by the addition of wires or tubes passing down into the oil, which will thereby conduct more heat to the oil. The drawings show several modifications of burners which may be adapted to this lamp with advantage.

Second, consists in forming wicks for lamps “of glass thread or “ wire spun or drawn fine, either in the shape of twist, or made “ into a fabric or tissue instead of the ordinary wicks made of “ cotton, &c.”

[Printed, 1s. 2d.]

A.D. 1841, December 21.—Nº 9198.

HENRY, GEORGE PALMER.—“ Improvements in apparatus to “ be applied to the glass chimneys of gas burners.”

These consist in placing a plate on the top of the glass chimney, such plate having an opening in the centre, and several small openings round; and over that, supported by stems, placing another plate of smaller diameter. The light will be thereby rendered more clear, the flame elongated, and the smoke consumed.

[Printed, 5d.]

A.D. 1842, January 11.—Nº 9213.

LE PETIT, SAMUEL HEARNE.—Improvements in the manu-
facture and supply of gas.

[No Specification enrolled.]

A.D. 1842, January 11.—Nº 9215.

WILLIAMS, CHARLES WYE.—“ Improvements in the construc-
tion of furnaces, and effecting combustion of the inflammable
“ gases from coal.”

[No Specification enrolled.]

A.D. 1842, January 27.—Nº 9237.

BOCCIU, GOTTLIEB.—“ Improvements in gas, and on the
“ methods in use, or burners for the combustion of gas.”

These consist, first, "in applying above the surface or jet holes of the burners, two or more concentric chimnies or cylinders in "addition to and within the usual chimney glass." The material used for the argand burners may in preference be German silver. Three chimnies are proposed to be used, the inner one as well as the central one may be made of sheet iron in preference, and the outer one may be made likewise of metal for the upper part of its length. In some cases the lower glass part of the outer chimney may be dispensed with, so that three metallic chimnies will then be suspended or supported over the ring of light. The diameters of these chimnies, and the distance they are placed above the burners will depend on circumstances. When two or more rings of lights are placed within each other, then the innermost ring should be placed at a certain height above the outer one, or that next to it. In order to equalize the different rings of light the holes in the innermost should be larger than those in the outermost ring, and the gas should be made to enter the outermost ring first, and the innermost ring last. The holes should be so small that it will require about 60 to pass three cubic feet of gas per hour, and they may be drilled about one twentieth of an inch apart.

By Disclaimer, dated 27th July 1842, the Patentee disclaims the following words in the title of the specification, namely, "in gas, "and on the methods in use, or burners."

[Printed, 11d. See Repertory of Arts, vol. i. (*enlarged series*), p. 33. London Journal (*Newton's*), vol. xxi. (*conjoined series*), p. 184. Mechanics' Magazine, vol. xxxvii., pages 212 and 298. Petty Bag (*and disclaimer*), 27th July 1842, also in Petty Bag.]

A.D. 1842, February 25.—N° 9265.

NEWTON, WILLIAM.—(A communication.)—"Improvement in "regulating the flow of air and gaseous fluids."

A counterpoised small gasholder being floated in a vessel containing water, is elevated or depressed, according to the pressure of gas contained within it. Attached to the dome of the gasholder is a chain or rod, from which is suspended a conical valve, placed within the mouth of the entrance pipe for the gas, and as it becomes elevated or depressed by means of the varying supply of gas, the conical valve also rises or falls, and thereby more or less closes or opens the aperture for the entrance of the gas as required.

[Printed, 9d. See Repertory of Arts, vol. xviii. (*new series*), p. 336. London Journal (*Newton's*), vol. xxii. (*conjoined series*), p. 290. Mechanics' Magazine, vol. xxxvii. p. 265. Record of Patent Inventions, vol. i., p. 32.]

A.D. 1842, May 9.—Nº 9344.

EDGE, THOMAS.—“ Improvements in apparatus for measuring “ gas, water, and other fluids.”

These improvements relate, first, to a mode of closing the valve by which the gas enters the meter, as the level of the water in the meter sinks. This may be effected by connecting the valve, by means of a rod, to a ball floating in the water, and steadied by weights; as the level of the water falls the floating ball and valve will follow, and the entrance aperture for the gas will be closed. The pipe by which the water required is introduced into the meter should be surrounded with a casing or box. The tendency to error in registering apparatus, through variations in the level of the water in the meter, may be compensated by means of a floating ball, which will elevate or depress a band or strap which passes round two conical pulleys in communication with the counting machine. The speed of these will be increased or diminished according to the position of the band on the pulleys.

Second, relates to the construction of “ station meters for gas-“ works.” These may consist of a tank and floating gasholder, the rising and falling of which is caused to register the quantity of gas passing through. The registering is effected by a pencil acting on a drum covered with paper, and driven by a clock. The pressure on the gasholder may be regulated by a weighted lever, which will take a more horizontal position as the gasometer lowers, and thence impart greater pressure to it. Such a lever may be applied in various ways.

Third, to “ modifications of station gas meters, in which the “ quantity of gas passed through them is ascertained by the “ measurement of a fractional part of the volume of gas only.” This may be effected by regulating the ingress valves, so that the small valve leading to a small meter will always, in size, bear a relative proportion to that of the valve for the general passage of the gas.

Fourth, relates to an improved apparatus for indicating gas pressure; and consists in inserting a graduated tube into a closed box containing some coloured liquid; the surface of this liquid being in communication with the gas in the main, the liquid will be elevated or depressed in the tube, according to the pressure in the main.

Fourth, relates to apparatus for measuring water or other

" liquids," and may consist of a closed vessel divided perpendicularly into two chambers, each chamber being suitably supplied with inlet and outlet pipes, with slide or other valves. The valves are reversed by a floating ball acting on an arm or lever, against teeth or pins on the side of a tumbler. In passing water into a steam boiler, the Patentee uses an " archimedean measuring wheel," and ensures equality of pressure by connecting the top of the wheel, by means of a pipe, with the steam in the boiler.

Fifthly, relates to improvements in " counting machines for meters," and consists of a series of graduated wheels, the first of which is set in motion by a pall or click ; this click is connected with a lever, which is elevated and depressed by a cam and spring at each revolution of the shaft on which it is placed. The motion of this shaft proceeds from the meter.

[Printed, 2s. 4d. See London Journal (*Newton's*), vol. xxiii. (*conjoined series*), p. 237. Engineers' and Architects' Journal, vol. vi., p. 105; and vol. vii., p. 129. Record of Patent Inventions, vol. i., p. 270. Transactions of the Society of Arts, vol. lv., p. 143.]

A.D. 1842, May 31.—N^o 9370.

PHILLIPS, HENRY.—" Improvements in purifying gas for purposes of light."

[No Specification enrolled.]

A.D. 1842, July 12.—N^o 9416.

CRUTCHELL, JAMES.—" Improvements in manufacturing gas, and an apparatus for consuming gas."

This invention consists, firstly, in "the admixture of atmospheric air, or other supporter of combustion, in any required proportions, with coal gas or other illuminating gas, previously to its issuing from the burner."

Secondly, "in employing the pressure of the stream of gas, by the intervention of suitable apparatus, to draw in the air, gas, vapour, or any combination thereof, which it may be desired to introduce."

Thirdly, "in using a drum revolving in water, to draw in air, gas, vapour, or any combination thereof; and in connecting the said drum with the drum of a gas meter, in order that it may be driven thereby." The air drum is enclosed in the same case as the gas meter, and on its revolving air is drawn in and mixed with the gas.

And fifthly, "in the mode of forming burners." A burner so formed consists of one inlet pipe, which is coiled round in such a manner that the inner circles of the coil, in preference, shall stand higher than the outer circles.

[Printed, 7d. See *Repertory of Arts*, vol. i. (*enlarged series*), p. 138. *Mechanics' Magazine*, vol. xxxviii., p. 300. *Record of Patent Inventions*, vol. i., p. 475.]

A.D. 1842, August 18.—Nº 9449.

DEFRIES, NATHAN, and TAYLOR, NATHANIEL FORTESQUE.

—“Improvements in meters for gas and other fluids.”

This invention consists, first, “in forming flexible partitions of “meters for gas and other fluids, of several inflexible surfaces “(that is surfaces not flexible under the pressure to which they “are submitted) combined together by a flexible material, by “which means the flexibility of each partition will result from the “bending of the partition at the lines of junction of the inflexible “parts of the partition.” “Each partition may be made up of “several parts, depending on the shape thereof; but four in-“flexible parts, the lines of junction radiating from the centre, “will be found to be the most convenient arrangement.”

Second, “in constructing meters for gas and other fluids, when “with four or more flexible partitions, in such manner that each “partition may be separately in connection with, and separately “aid in giving motion to a common axis (instead of being “coupled together in pairs as heretofore), for registering the “quantity of gas or other fluid passing through a meter.”

Third, consists of a dry meter, containing seven (in preference) flexible partitions, each separately acting upon and working the rotatory valve affixed to the axis.

[Printed, 2s. 4d. See *Transactions of the Society of Arts*, vol. liv., p. 195.]

A.D. 1842, August 18.—Nº 9451.

GURNEY, GOLDSWORTHY.—Improvements in apparatus for producing, regulating, and dispersing light and heat.

These consist, first, “in placing or disposing curved or plane “zones or facets, with reflecting surfaces, about the light in such “a manner (and at such angles), as to direct the light in certain “directions, and to render as much of the light as possible “profitably useful or available for the purposes of illumination.”

Secondly, relates to an apparatus for regulating the pressure and flow of gas from the mains to the burners, and consists of a float floating in water, in a chamber which is surrounded by and in communication with another chamber containing water. The float carries a valve, and as it is more or less depressed by the pressure of the gas which flows through the valve, acting on the surface of the water, the valve is more or less closed and the flow of gas diminished or increased, as required.

Third, consists in placing above the burner a vessel containing water, which may be surrounded by a fabric of wire gauze, for the purpose of absorbing the heat from the flame. Such a vessel may be provided with suitable piping, through which the steam or hot water produced may be conducted away and applied to any suitable useful purpose.

[Printed, 1s. See Mechanics' Magazine, vol. xxxviii., p. 161.]

A.D. 1842, November 2.—N^o 9506.

PELLETAM, PIERRE.—“ Improvements in producing light.” These relate to the production of and burning of inflammable vapours by burners such as are used for burning gas, and consists “ generally in the use of a small boiler set in a furnace, from whence “ the vapour arising from such volatile fluids as natural naptha, “ wood and coal naptha, turpentine, &c. is conveyed through a “ horizontal main, both ends of which communicate with the “ boiler, in order that all condensed liquid that may form in the “ horizontal main shall flow back into the boiler to be re- “ evaporated. In connection with this horizontal main, are fixed “ the pipes that supply the burners.” The vapour, after leaving the boiler and before it enters the main, is caused to pass through a pipe laid through the fire, which, heating the vapour, causes it to be less subject to condensation. It is advantageous to add some water to the volatile fluid in the boiler, and also to pass the vapour and steam through a worm condenser, whereby some liquid will be condensed and flow back to the boiler. The main, which supplies the burners, should be suitably protected from the the effects of cold. The cock used to supply the burners is placed with its plug vertically, and from the bottom of the plug proceeds a small pipe, the lower end of which dips into a small cup ; by this pipe any liquid condensing will flow back into the

main. In some cases heat may be applied to certain parts or bends of the piping for the purpose of volatilizing condensed liquid.

[Printed, 1s. 4d.]

A.D. 1842, November 25.—Nº 9527.

BAGGS, ISHAM.—“Improvements in producing light.”

These consist, first, in combining a gas burner or burners for burning gas, with the wick or burner of a lamp suitable for burning naptha or other matter liable to give off smoke. The flow of gas from the burners may be variously directed, but in such a manner that it will mix with the vapour from the lamp, so that both may be consumed together. A chimney may be used, the bottom part of which is of glass and the upper part of metal, to conduct the flame and heat upwards.

Second, in combining conical glass chimneys with naphtha and other lamps, in such manner that the smaller diameter of the chimneys shall be downwards.

[Printed, 1s. 8d. See *Repertory of Arts*, vol. ii. (*enlarged series*), p. 146. *Mechanics' Magazine*, vol. xxxviii., p. 475.]

A.D. 1843, January 26.—Nº 9600.

WINSOR, FREDERICK ALBÉRT.—(A communication). “New apparatus for the production of light.”

This invention consists of an apparatus or burner whereby “oil or other combustible liquors or fatty matters” are converted into gas by the heat of its own flame, and consumed as gas.

The oil is caused to flow up a narrow tube with an open mouth to a certain height; the top of the tube is wrapped round with linen or other similar substance, or fitted with several metallic discs, and over this is fitted a conical shaped cap made of “silver or of alloys of silver and platinum in preference.” The bottom edge of the cap fits tight to the lower edge of an inner cone, the top of which is attached to the oil pipe, leaving a narrow space between the cones. The outer cone is perforated with holes near its lower edge for the emission of the gas or vapour. In lighting this apparatus the outer cone is heated till the gas ignites at the perforations, after which the heat from the jets themselves is sufficient to continue the combustion. This construction of burner

may be advantageously used for burning gas that has been enriched by the addition of naphtha, &c., or to heat gas itself before combustion.

[Printed, 5d. See *Repertory of Arts*, vol. ii. (*enlarged series*), p. 138. London Journal (*Newton's*), vol. xxiii. (*conjoined series*), p. 168.]

A.D. 1843, January 26.—N^o 9612.

PHILLIPS, HENRY.—“Improvements in removing impurities from coal gas for the purposes of light.”

This “invention consists of applying the ammonia in ammoniacal liquor when rendered caustic by lime to the purpose of separating impurities from coal gas contained therein.”

“ I take the ammoniacal liquor of gasworks, which is deposited by means of the condensing vessel; likewise the liquor discharged from the water-washing vessels, such condensing and water-washing vessels, forming part of the apparatus in use in gasworks, are therefore well known. These liquors, either mixed together or separate, I put into the vessels known in gasworks as lime washing vessels, and add thereto as much recently slaked lime as will render the mixture of the consistency of cream of lime, and I cause the stream of gas to pass through such mixture, kept in agitation in such vessels by the means now adopted in the lime washing process for the purpose of purifying the gas.”

[Printed, 3d. See *Repertory of Arts*, vol. ii. (*enlarged series*), p. 164. London Journal (*Newton's*), vol. xxv. (*conjoined series*), p. 39.]

A.D. 1843, February 17.—N^o. 9637.

BROOK, CHARLES.—“Improvements in the apparatus for purifying gas.”

The nature of this invention consists in “the mechanical shaking or agitating of the pulverized lime, or similar material, while in contact with the gas to be purified, so as to present a greater purifying surface.” The lime, in a state of powder, but damp, may be placed in a revolving cylinder through which the gas to be purified is caused to pass. The cylinder is provided with shelves to catch and carry up the lime so far and let it fall again; and hammers may be introduced to strike the shelves to cause the lime to fall through the gas in a continued shower.

[Printed 10d. See *Repertory of Arts*, vol. ii. (*enlarged series*), p. 271.]

THE MANUFACTURE

A.D. 1843, February 28.—N^o 9647.

BOCCCIUS, GOTTLIEB.—“ Improved arrangements and apparatus for the production and distribution of light.”

These consist, first, in the addition to the chimneys of burners “ fier.” The gas burner used in preference consists of two concentric rings perforated with the required number of holes, and the “ light magnifier,” which is a tube made of the best “ German silver,” in preference, and brought to a cone or point at the lower end, is suspended within the chimney and over the centre, be of about the same length as the concentric glass chimneys, and about four-fifths of the diameter of the innermost chimney. This apparatus is more particularly to be adapted to the Patente’s invention, for which he obtained Letters Patent, dated 27th January 1842.

Second, consists in adapting the light magnifier to argand lamps.

Third, relates to the adaptation of a reflector having a face of an undulating or wavy form” to lamps of any kind, for the purpose of distributing the light.

[Printed, 9d.]

A.D. 1843, March 16.—N^o 9663.

CROLL, ALEXANDER ANGUS, and RICHARDS, WILLIAM.—

“ Improvements in the manufacture of gas for the purposes of

“ illumination, and in apparatus used when transmitting and

“ measuring gas or other fluids.”

“ The object of the first part of this invention is, so to set clay retorts and iron retorts that the heat of the fire may first heat

“ the clay retorts, and then heat the iron retorts, avoiding placing

“ the clay retorts above the iron retorts, and it is preferred that

“ partitions.”

The second “ object of the improvements is, to apply frames or

“ supports within the compartments of a gas meter of a shape to fit

“ the flexible partitions (as heretofore practised), so that when the

“ flexible partitions are worked to and fro by the pressure of the

“ gas transmitted through a gas meter, the flexible partitions sh

" be received into frames, and prevented being moved too far; " and also to the arrangement of the apparatus for giving motion " to the valves more advantageously." The flexible partition on working to and fro by means of the gas, actuates the end of an arm or lever, the other end of which, through a connecting rod, works the slide valve.

" The third part of this invention relates to a mode of applying " apparatus to the joints for fastening gas meters to the supply " pipes from the gas mains used for transmitting gas to consumers " in order that the gas consumed by each person may be measured " and recorded accurately, the object being to prevent the meters " being removed from the gas supply pipes, and the gas consumed " in the absence of the meters." The apparatus referred to consists of a ring lock, the parts of which cannot be undone " without " bringing the studs into one line by knowing the order of the " letters or signs to which the apparatus has been set."

[Printed, 2s. 5d.]

A.D. 1843, March 16.—Nº 9668.

MALAM, JAMES.—" Improvements in the manufacture of gas " retorts, and in the modes of setting gas retorts." " This invention consists, first, in the mode of arranging the flues in setting " retorts for the manufacture of gas.

" Secondly, in the mode of manufacturing carburetted hydrogen " gas by conducting the vapours from water and tar into " retorts.

" Thirdly, in the mode of manufacturing carburetted hydrogen " gas by means of double retorts." The Specification of this invention gives a great amount of detail as regards the exact dimensions and arrangement of the parts, the object being the production of carburetted hydrogen or coal-gas from pit coal, coal tar, or water, or from the vapours of coal tar and aqueous vapour.

[Printed, 11d.]

A.D. 1843, March 24.—Nº 9675.

BARCLAY, ANDREW.—" Improvements in lustres, chandeleirs, " pendants, and apparatus connected therewith to be used with " gas, oil, or other substances, which invention is also applicable " to other purposes." These consist in applying " one, two, or " more fusees with coiled springs continued therein," for the pur-

pose of suspending lustres and pendants of every description. The pendant is connected by cords to a tube, which is affixed to the ceiling, and the cords are wound and unwound by the action of the coiled springs, which have sufficient strength to retain the pendant at any required elevation.

[Printed, 5d. See London Journal (*Newton's*), vol. xxiii. (*conjoined series*), p. 324.]

A.D. 1843, March 25.—N° 9679.

FARADAY, ROBERT.—(A communication.)—“ Improvements in ventilating gas burners, and burners for consuming oil, tall, or other matters.” “ This invention consists of a means of ventilating lamp burners, whether they are consuming gas, oil, or other matters, and consequently whether using wicks or not, the object being so to arrange the glass chimneys used that the products obtained by combustion may pass up the inner glass chimney, and then in place of passing into the atmosphere of the room or place in which the same is burning, such products of combustion are by a downward draft caused to descend downwards, and be conducted by a suitable tube or enclosed passage out of the room or place in which the lamp is situated.”

[Printed, 9d. See London Journal (*Newton's*), vol. xxiv. (*conjoined series*), p. 99. Mechanics' Magazine, vol. xxxix., p. 271.]

A.D. 1843, April 19.—N° 9701.

FARWIG, CARL LUDEWIG.—Improvements in gas meters. “ These improvements in gas meters consist, firstly, in the adaptation of a circular series of expandible chambers or pockets, which are caused to revolve by the pressure of the gas passing through them, and by their rotary movements are made to open and close the cock or valve through which the gas proceeds into and out of the chambers.

“ Secondly, in a circular series of expandible chambers or pockets made stationary, which are caused to expand and contract consecutively by the gas passing through them; the actions of the flexible diaphragms of which being communicated through crank rods to a corresponding series of toothed wheels, cause the valve or cock to open and close the apertures by which the gas passes into and out of the chambers.

“ Thirdly, in a double series of expandible chambers or pockets placed opposite and parallel to each other, the flexible dia-

" phragms of which being moved reciprocally by the passage of
" the gas through the chambers cause certain levers to shift the
" positions of the valves, whereby the ingress and egress of the
" gas is effected."

[Printed, 2s. 2d.]

A.D. 1843, June 3.—N° 9755.

ALLMAN, FENNEL.—“ Improvements for the production and diffusion of light.” These consist, first, in cutting a “ tongue or wire ” with transverse grooves (a description and drawing of the machine for this purpose is given in the Specification), and inserting said grooved wire as rings into argand burners, or in other forms into other shaped burners in such a manner that the grooves will form the apertures for the exit of the gas. The principle of the invention being the “ forming of apertures by the placing in contact plane and cut or indented surfaces, or the partially filling or stopping an apperture or slot, and employing the interstices so left for the transmission of gas to the point of ignition.” To prevent corrosion such tongues or wires should be plated or gilt by the electrotype process.

Second, consists of an improved cock for the transmission of gas. The gas enters at the lower end of the plug and passes through an opening into a “ union passage in the jacket,” and thence returns into the plug by a hole, and thence to the burner. On moving the plug round the continuity of the passages is broken and the gas shut off.

Third, relates to an apparatus to prevent “ down currents in chimneys of burners,” and consists in placing over the chimney a concave metal plate with a hole in the centre; on the hole is placed a square bent pipe open at each end, and with an opening to fit the hole in the concave metal plate. The draft proceeds through the bent pipe, and is prevented from returning by placing in each bend of the pipe an inclined piece of metal forming a small angle, upon which air descending the pipe would impinge and be impeded in its downward course.

Fourth, consists in adapting to the service pipe of a burner, a screw by which a valve and plate may be raised or lowered, whereby the flow of gas may be regulated. The same screw elevates or lowers a cup, which surrounds the wire gauze for admitting the required air to the burner, by which means the supply of air is regulated to the supply of gas.

Fifth, consists in adapting to the plug of the supply cock a ring with openings in it, which, when they coincide with openings in another ring, will admit air to the burner, and that in proportion to the quantity of gas that passes through the plug of the improved cock. The access of air through other channels should be closed by a glass plate. Over the flame is placed a plate of metal or talc, with a hole in it to cause the flame to concentrate as it passes through ; this plate also prevents down currents. The applications of this principle are various.

Sixth, relates to the application of a system of prisms and reflectors to gas or other lights.

Seventh, to lamps for the combustion of fluid adipose matter.

Eighth, to apparatus for manufacturing candles.

[Printed, 1s. 6d. See London Journal (*Newton's*), vol. xxiv. (conjoined series), p. 321.]

A.D. 1843, June 10.—N° 9772.

NEWTON, WILLIAM EDWARD.—“ The novel application of “ certain volatile liquids for the production of light, and improvements in the lamps and burners to be employed for the combustion of such or other volatile liquids.”

[No Specification enrolled.]

A.D. 1843, September 6.—N° 9881.

PELLETAN, PIERRE.—“ Improvements in the production of “ light.” These consist, first, “ in burning the steam of spirit “ of turpentine [or any other combustible matter less volatile than “ water] mixed with the vapour of water in such proportion as is “ naturally determined by the ebullition of the liquid ; second, in “ mixing common air with the steam in any suitable space pre- “ vious to its being ignited.” An apparatus may be formed close to each burner for the admission of the air through openings, which are regulated by an enclosing ring provided with corresponding openings, and the flow of the mixture of vapour, steam, and air may be regulated by introducing within the burner two dia- phragms, one of which is serrated at the edge, and the other has an aperture in its centre through which the mixed vapour is caused to pass before issuing from the jets.

[Printed, 6d. See Engineers' and Architects' Journal, vol. vii., p. 115.]

A.D. 1843, October 12.—Nº 9904.

HUTCHISON, STEPHEN. — “ Certain improvements in gas “ meters.” “ This invention consists in the application and use “ of cup valves sealed with quicksilver or other suitable fluid, for “ the inlet and outlet valves, to the measuring chambers of gas “ meters generally.”

[Printed, 1s. 7d. See Engineers' and Architects' Journal, vol. vii., p. 197.]

A.D. 1843, November 16.—Nº 9942.

SCOTT, GEORGE. — “ Improvements in the manufacture, purifi-“ cation, and combustion of gas or gases.”

[No Specification enrolled.]

A.D. 1843, December 14.—Nº 9989.

YOUNG, WILLIAM. — “ Improvements in the manufacture of “ lamps and gas burners.”

These consist, first, “ in the application of perforated talc or “ mica, in the manufacture of lamps for mining and other pur-“ poses.” The perforated talc or mica may be placed round the flame for the purpose of obtaining increased light, as well as at the upper part of the lamp to obviate the burning and destruction of the wire cloth.

Second, in the application of a moveable ring or “ cylinder “ external of the wick,” of an argand lamp, whereby a superior guide will be offered for cutting off the wick correctly; in raising the wick holder by means of a rack and pinion, by which its position in respect to the deflecting instruments may be regulated; in the application of two or more deflecting instruments interior of the flame. These deflectors are placed on a stem within the flame; and may be elevated or depressed as required by means of a screw.

Third, consists in applying wood or other non-conducting substance between the burner and the spirit vessel; also in regulating the height of wicks and flame of lamps by means of a tube, which may be caused to slide up and down outside of the wick-holding tube.

Fourth, in arranging wicks and wick-holders of candle lamps, that the same may rise and fall in accordance with the upper

part or level of the cylinder of tallow or other material which is being consumed. This may be effected by attaching the wick-holder by standards to a cylinder which may slide up and down easily.

Fifthly, consists in applying two or more deflectors, such as have been described, to the interior of an argand gas flame.

[Printed, 2s.]

A.D. 1844, January 30.—N^o 10,031.

BURET, BAPTISTE, and DAVID, FRANCOIS MARIUS.—“ Improvements in the manufacture of gas.”

Consisting in “the construction of the retorts used in the manufacture of gas [from all fatty bodies that are capable of being rendered liquid by heat] in such manner as to expose the matters operated upon to a greater surface of heat, and in combining apparatus for the manufacture of gas.” The oil, pitch, tar, &c. is placed in a vessel which is heated by the flue of the furnace, and is run into an upright retort filled with coke. The gas evolved passes through the refrigerator and into the washing chamber; “this chamber has a division in which are placed small pieces of heath wood, through which the gases pass from the washing chamber to the gasometer.”

[Printed, 6d. See Repertory of Arts, vol. iv. (*enlarged series*), p. 139. Engineers' and Architects' Journal, vol. vii., p. 319.]

A.D. 1844, March 7.—N^o 10,096.

CROLL, ALEXANDER ANGUS, and RICHARDS, WILLIAM.—“ Improvements in the manufacture of gas for the purpose of illumination, and in the apparatus used therein, and when transmitting and measuring gas.”

These improvements relate, first, to the mode of making gas for the purpose of illumination, by generating hydrogen gas, by means of the action of an acid (sulphuric acid in preference) on metallic zinc and water, in a leaden vessel, in which is also a supply of naphtha or other suitable liquid. The holes of the burners used to consume the resulting mixture of gases should be much smaller than those in the ordinary burners.

Secondly, relates to an advantageous manner “of fixing clay retorts,” or clay and iron retorts. Three arches are built, and

each filled with retorts. The first and the third arches are provided with furnaces or fire-places, and the second or middle one is heated by the hot draft from the other two. The peculiarity of this part of the invention consists in the mode "of supporting the various retorts by means of bricks or tiles intermediate of the back and front walls of the arch, whereby the upper retorts are not in currents of heat passing from the fire-place to the flues, but may be said to be in a quiet atmosphere of heat." The heat produced from the two outer arches or nests of retorts is caused to enter the middle arch at the bottom, and ascending among the retorts therein, heat them; or a perpendicular partition may be placed between the retorts in the first and third arches, whereby the flame draft will be carried up and over the partition and down the other side and on into the middle arch; or two arches, each filled with retorts, may be built one above the other, the upper one only being supplied with a furnace or fire-place, the flame draft from which after heating the enclosed retorts, is caused to descend by flues and enter the lower arch at its upper part, and to proceed downwards among the enclosed retorts, and then to escape by a flue at the bottom.

Thirdly, relates to making retorts of clay "by hydrostatic or other pressure in moulds." The clay used for this purpose should be nearly in a dry state, or heated to 300° or 400° F., and mixed with as little gas tar as will render it plastic. "The clay being introduced into the mould the press is worked and the core progressively forced in, the clay rising at the sides of the core (which may be hollow and heated by steam), and any excess of clay is allowed to escape to the upper parts."

Fourthly, relates to improvements on the "gas meter, having two partitions moving on flexible connections;" and consisting, first, in "employing as large a disc of metal and surrounded by as narrow a margin of flexible material as possible, and so arranging the flexible material used that it shall only be bent or folded in one direction; and this is accomplished by using a plate which shall move to and from the point of junction of the flexible material used, and thus avoid passing, so as to fold the flexible material in the opposite direction." Second, in a "diagram," shown in the drawings, whereby the proper "rule" may be understood for "forming the arms and the con-

" connecting rods, by which motion is obtained to an axis working
" the valves and the train wheels."

[Printed, 6s. 2d. See Mechanics' Magazine, vol. xlvii., p. 45. Engineers' and Architects' Journal, vol. vii., p. 369. Patent Journal, vol. iii., p. 144; and vol. viii., p. 267. Common Bench Reports, vol. ix., p. 479.]

A.D. 1844, April 10.—N° 10,139.

MURRAY, JAMES.—"A new method of using and applying artificial gas made from coal, oil, or other substances, for lighting and ventilating caverns, pits, or mines, or other pits where minerals or metals are worked or extracted;" "This consists in lighting and ventilating caverns, pits, or mines, or other pits where minerals or metals are worked or extracted by means of artificial gas. The gas may be conveyed through pipes or tubes into the workings or galleries, along which workings or galleries, at convenient distances and elevations, jets or burners of suitable sizes may be used, and the gas consumed by burning the said jets or burners, and the flame at these jets or burners may be uncovered or otherwise, according to the state of the mine. The gas burning in the various workings or galleries will have the effect of giving a safer, greater, more effective, and at the same time a cheaper light in mines than any other mode of lighting hitherto used in mines, and will enable the miners more safely, comfortably, and effectively to execute the workings in the mines, by means of the consumption of the foul air, &c."

[Printed, 3d. See Repertory of Arts, vol. iv. (*enlarged series*), p. 240. Engineers' and Architects' Journal, vol. vii., p. 423.]

A.D. 1844, April 18.—N° 10,146.

GRANT, DONALD.—"Improvements applicable to the ventilation of apartments in which gas and other combustible matters are consumed by ignition."

These consist in "the employment of an earthen or stoneware tube inserted in the ceiling of the apartment for carrying off the products of combustion in place of a metal one, as has been herein-before practised; and also in the employment of a cold-air tube for the purpose of bringing a current or stream of cold air, and causing it to impinge upon or play around the external surface of the tubes which convey away the heated air and gases,

" and thereby to prevent such tubes from becoming overheated." For protection from fire the stoneware tube is enclosed in an iron tube. The products of combustion are conveyed from the burner to the stoneware tube by means of suitable chimneys.

[Printed, 1s. 6d. See London Journal (*Newton's*), vol. xxv. (conjoined series), p. 397. Engineers' and Architects' Journal, vii., p. 421.]

A.D. 1844, April 30.—N° 10,170.

CORDEN, ROBERT, and SMITH, SIDNEY.—"Improved economical apparatus for making gas for illumination."

" The object of this invention is the construction of a convenient economical apparatus for generating carburetted hydrogen gas, and the adaptation thereof to the grates, stoves, or fire-places which are ordinarily used in private dwellings or other houses or buildings, so that the heat of such fire-places when in use may be employed for the distillation of gas from coal or any other material. This object is effected by removing the ordinary back plate of the stove or grate, and fixing or placing a retort made of wrought iron at the back of the grate in lieu thereof, so that the fuel in the fire-place is in immediate contact with an external surface of the retort, and the coal contained therein can become heated sufficiently to generate gas. The shape and size of the retort must of course be varied according to circumstances and situation, as, for instance, in some cases it may be more convenient to place the retort at the side, although we generally prefer using it at the back." The drawings show the application of this invention to a grate, German stove, and to engine boilers.

[Printed, 1s. 7d.]

A.D. 1844, June 4.—N° 10,211.

MURDOCH, JAMES.—"Certain improvements in the manufacture of gas, and in the apparatus employed therein."

[No Specification enrolled.]

A.D. 1844, June 4.—N° 10,215.

COWEN, JOSEPH.—"Improvements in making retorts for generating gas for illumination."

The object of this invention is, in the first place, to make clay retorts which shall be better able to withstand changes of temperature, and consequently less liable to crack. To effect this, "mix

" with Newcastle fire-clay, Stourbridge fire-clay, or any other kind
 " of clay suitable for the purpose, sawdust, pulverized wood, char-
 " coal, coke, carbon obtained from the interior of gas retorts, and
 " other carbonaceous materials, in such proportions as the quality
 " of the clay may require. The more aluminous the quality of the
 " clay, the larger will be the quantity of carbonaceous matter
 " required to be combined with it," varying in amount from about
 five to twenty-five per cent.

Secondly "applies to the peculiar kinds of mould, and the
 " machinery employed for manufacturing gas retorts from earthy
 " materials." The clay is introduced into a cylindrical box or
 chamber, the further end of which is contracted and shaped to be
 of the size and shape of the outer surface of the required retort,
 Within this contracted part, called the "nose piece," is firmly
 placed the "core" to form the inner surface of the retort. The
 piston is caused to advance by means of suitable mechanical power,
 and to compress the plastic clay forward so as to fill the space
 between the cone and the nose piece. By continuing the pressure
 the clay will be projected out at the end of the nose piece to
 any length required, and of the desired form. Such moulded clay
 may then be cut off by a wire, and sent to the drying place.

[Printed, 10d. See London Journal (*Newton's*), vol. xxvi. (*conjoined series*),
 p. 9. Mechanics' Magazine, vol. xlvi., p. 108. Engineers' and Architects'
 Journal, vol. vii., p. 90.]

A.D. 1844, August 15.—Nº 10,289.

CORMACK, WILLIAM.—"A new method or plan for purifying
 " coal gas."

[No Specification enrolled.]

A.D. 1844, September 5.—Nº 10,304.

RICHARD, AUGUSTE HYPOLITE.—"Improved apparatus for
 " heating and lighting."

This apparatus consists in "the combination of a purifier and
 " refrigerator in so small a compass as to fit it for being combined
 " with a retort in a stove or grate in any room or apartment." The
 retort is fitted up in the stove of suitable form, and heated by
 the fuel therein, the heat from which may also heat the apartment.
 The purifier and refrigerator are in small compass and placed over
 the stove. The gas produced may be conveyed to a gasometer or

burnt direct by passing it through a small "recipient," which is a vessel divided into compartments by zinc or galvanized iron plates perforated with small holes, which has a tendency to prevent flickering. The apparatus is supplied with suitable cocks and piping to direct the flow of gas as required.

[Printed, 7d.]

A.D. 1844, September 26.—Nº 10,326.

MALAM, JAMES.—"Improvements in purifying coal gas, and " increasing its illuminating power, and preventing the circulation " of it being impeded by frost."

These improvements consist, first, in the application of "sulphate of iron," or green vitriol, for the purpose of purifying gas from sulphuretted hydrogen. The gas is caused to pass through a vessel in which sulphate of iron and water is placed. Suitable agitating apparatus is applied to agitate the solution.

Secondly, in the means of freeing coal gas from "aqueous vapor." The gas is caused to pass through a series of condensing or precipitating vessels called "freezing cylinders." In these cylinders are rotating shafts, on which are placed a number of light wheels, and upon the periphery of these wheels are fixed scrapers, which are caused by means of springs, to act upon the inner periphery of the cylinders. The revolution of these agitators causes the gas to come in contact with the cold surface of the cylinders, and to deposit its moisture in the shape of "icy particles resembling hoar frost."

Thirdly, consists "in desiccating coal gas after it has been subjected to the preceding processes," by causing it to pass through another set of cylinders, where it is exposed to the absorbing action of alcohol, or any other strong spirit." The alcohol may be caused to flow down strips of wick suspended in the vessels, through which the gas to be desiccated is passing.

Fourthly, consists in "improvements in the valves and other parts of gas lime purifiers." The valve referred to consists of a circular cap which may be elevated and depressed by a rod and screw; when depressed, its edges enter a cup surrounding the induction pipe suitably supplied with water to form a water joint. Several of these valves may be enclosed in one valve chest suitably divided by partitions.

[Printed, 3s. 11d. See Mechanics' Magazine, vol. xlvi., pp. 273, 289, 305, and 321.]

A.D. 1844, October 17.—N° 10,355.

WRIGHT, ALEXANDER.—“Certain improved apparatus for measuring gas, water, and other fluids, and in the means of manufacturing the same.”

“A strip of metal suitably perforated is formed into a ring, upon which the hoop of the meter wheel to be divided is placed. This hoop is held firmly against the stops on the template, and a scribe is passed along the various slits, thereby marking the divisions on the inside of the hoop of the meter wheel.”

These consist, “firstly, in the construction of three measuring chambers, formed by the intervention of two moveable diaphragms. The dividing of the case by two flexible diaphragms gives three chambers.”

Secondly, “the direct action of the arms or rods which connect the rotary crank with the diaphragms,” and “without the intervention of the stuffing boxes. The levers or rods from the centres of the flexible diaphragm work direct on to a central cranked shaft and cause it to rotate and move the valve as required.”

Thirdly, “in the construction of the valve used. One part of the valve rotates with the cranked shaft, while the other part in communication with the ingress or egress pipes is stationary; both parts are suitably provided with such openings that the gas will be allowed to flow into a particular chamber and out of the preceding one on a regulated system.”

Fourthly, “in the use of galvanized iron for the construction of the casing and other parts of a gas meter where necessary;” and

Fifthly, “in apparatus described for marking the divisions upon the hoop or periphery of the wheel or drum of a wet gas meter.”

[Printed, 10d. See London Journal (*Newton's*), vol. xxvii. (*conjoined series*), p. 17.]

A.D. 1844, December 18.—N° 10,440.

TAYLOR, NATHANIEL FORTESQUE.—“Improvements in apparatus for measuring gas.” This invention consists “in arranging flexible partitions, and combining two or more pairs in the same meter, that the axis of each pair shall work the valves of its pair, the whole of the axis being combined by connecting rods.”

" Second, in the mode of gearing the axis, worked by flexible partitions in meters, by employing toothed wheels.

" Third, the arrangement of dial-plate and works connected therewith, for shewing the separate feet of gas passing through a meter." The "casing" may be circular, and enclose four or more flexible chambers combined as above. The motion of the flexible chambers is taken off by means of a screw-wheel on one of the crank axes, which takes into and drives a pinion on the shaft of the registering apparatus. The dial and wheels of the registering apparatus suitably arranged, so that it will show the "separate feet of gas passing through a meter."

[Printed, 1s 5d.]

A.D. 1845, January 28.—N° 10,499.

NORTON, GEORGE JAMES.—" An improved cooking apparatus, parts of which are also applicable to the purposes of lighting and heating." This invention consists of an arrangement of parts, the whole forming a compendious cooking apparatus, "comprising a furnace and fire-place with the necessary flues for heating successive ranges or nests of cooking ovens, steaming closets, hot plates, revolving jackwork for open roasting, and an apparatus for generating and distributing gas from the same furnace." The gas retort is placed over the furnace, and the gas generated is led off to the usual gas apparatus and gasometer behind the cistern."

[Printed, 1s. 4d.]

A.D. 1845, February 20.—N° 10,532.

MURDOCH, JAMES.—" Improvements in the manufacture of gas, and in the apparatus employed therein." " These improvements in the manufacture of gas consist, first, in causing the gas from coal on leaving the distillatory retort to enter a tube or tubes containing an iron spiral, maintained at a cherry-red heat, for the purpose of purifying the gas, and for decomposing and converting into gas the tar and essential oils which are mingled with the gas."

" Second, when in combination with the first improvement the decomposition of water by means of incandescent coke or charcoal for the purpose of obtaining hydrogen gas, the apparatus for this purpose being connected to the purifying retort, and heated by the same furnace."

" Third, in combination with the first improvement the employment of any suitable apparatus for converting resinous and essential oils, schistus and similar substances into gas, such apparatus being connected to the purifying retort aforesaid, and heated by the same furnace."

" Fourth, in the general arrangement and combination of the parts of the apparatus."

" Lastly, the application of purifying retorts containing a spiral of iron to all kinds of retorts for making gas from coal."

[Printed, 9d. London Journal (*Newton's*), vol. xxvii. (*conjoined series*), p. 392. Engineers' and Architects' Journal, vol. ix., p. 62; and vol. viii., p. 298.]

A.D. 1845, March 3.—N^o 10,535.

SMITH, WILLIAM.—" Improvements in gas meters and gas meter cases." These consist, first, "in giving motion to the valves of meters with one flexible partition, by means of a spring, such spring being caused to react suddenly during the movement of the flexible partition." The reversing motion of the valves is thus effected by a spring instead of a tumbler weight. Second, in giving motion to the hands or dials of indexes to gas meters," by means of a series of wheels actuated by a peg elevating a spring or lever, to which is connected a pall working into a ratchet wheel. Third, "in using a valve to cut off the supply of gas through a meter by its closing in the event of the meter being tilted or inclined; and also the mode of constructing the measuring wheel of gas meters [by soldering the partitions in a certain manner] so that the aperture communicating from one chamber to another will remain sealed." This may be effected (in the first case) by a balanced and suspended valve, which remaining perpendicular while the meter is canted will close the siphon pipe. Fourth, consists in " preventing the water being sucked out of gas meters by having a constant air passage not accessible by its being inclosed within the index box." Fifthly, in "applying cast metal feet or supports to gas meters, the bodies of which are of wrought metal." Sixthly, in "forming a rim for the joint round the backs and fronts of gas meter cases by stamping."

[Printed, 1s. 4d.]

A.D. 1845, April 10.—N^o 10,607.

CORMACK, WILLIAM.—“ Improvements in purifying gas.” “ The object of the first part of this invention is to employ other means than the pressure of the gas in the retort or generator to cause the gas to pass into and through any desired column of purifying liquid [say a column of two feet], thus relieving the retorts or vessels in which the gas is generated from being pressed on or influenced by the column of fluid, through which the gas is forced for performing the process of purification.” For this purpose the Patentee employs in preference two gasometers, one of which may be filling with gas from the hydraulic main, while the other, suitably depressed, causes the gas to proceed forward through the purifiers under the increased pressure.

Secondly, consists in the application for the purpose of purifying gas of acetate of lead, acetate of iron, and acetate of baryta, muriate of baryta, muriate of lime, and acetate of lime.” A solution of 112 lbs. of brown acetate of lead in two hundred gallons of water is placed in the usual wet lime purifier, and the gas is caused to pass through it. The gas is then passed on to and through a second purifying vessel containing a solution of muriate of baryta or muriate of lime “or acetate of lime.” The liquid from the first purifier may have added to it carbonate of lead, when on being heated carbonate of ammonia will be distilled over, and the acetic acid will form acetate of lead. The deposited sulphuret of lead may be converted into carbonate of lead by means of lime and charcoal heated with it in a reverberatory furnace. In the second purifying vessel will be formed muriate of ammonia and the carbonate of the earth used. Another method of applying acetate of lead consists in adding it “to the crude ammoniacal liquor, such as it “comes from the condensing mains.” When “acetate of iron” is employed the acetate of ammonia so formed may be decomposed by means of “sulphate of iron” forming sulphate of ammonia, and acetate of iron, to be used again in the purifier.

[Printed, 4d. See Repertory of Arts, vol. vi. (*enlarged series*), p. 362.]

A.D. 1845, April 15.—N^o 10,618.

PHILLIPS, HENRY.—“ Improvements in purifying gas.”

“ This invention consists in using for the wet lime process, the lime which has been previously employed for the dry lime

CHARGE OF GAS.

In the first place the gas
is introduced into the air
pump at the ordinary
rate, according to the air being
discharged from the air lime
being suitable for purifying
with the dry lime purifiers as
soon to be immediately mixed
with receivers, to prevent it from
taking additional portions of
water consistency for the
purpose of using fresh lime for
purification in the ordinary

(1860-61 series), p. 355.
1860-61 series, p. 271. Engi-

neering practice. In the reduction of
copper, the method of illumination
employed is that employed in
the blast furnace. The
process consists of
heating iron
in furnaces by
burning coal
in the furnace
and removing
the heat from
the furnace
by pipes.
The furnace and
the pipe fill the
space over the
furnace which is
thus surrounded

with a mass of such
material as is required

"fusible metal" joint, resembling a water joint, the upper and lower caps to the retort being depressed and elevated in or out of the melted metal by means of levers or otherwise, to form or break the joints when required for the admission of new coals, bones, &c. A "case," to contain the coal, &c., may be used for this purpose, which will facilitate the emptying and charging of the retort.

Fourthly, in the interposition of "receiver," which may be artificially cooled by an internal worm, and the bottom being made double may be heated by steam, in order "to equalise the exhausting action of the pump, and prevent any irregular impulses in the retorts or intermediate apparatus."

Fifthly, consists in condensing the gas in gas holders by means of a ram and plunger pump, to the extent of one atmosphere or to ten atmospheres if required. The Patentee proposes to varnish the pipes and vessels employed, "in order to prevent exosmosis and endosmosis."

Sixthly, relates to a "gas meter," which may be of any form, but so as "to act on the principle of a gaseous wire drawer, and derive its motion from the application of the pressure or elasticity which the gas possesses when it arrives within the meter, acting unequally in the hollow revolving arms at opposite points of the centre of its motion, the individual motion of each arm being constituted of the same forces, and acting on the same principle of a common sky rocket or catherine wheel." The gas, before proceeding to the meter, is caused to pass through a pipe or tube or other vessel containing chloride of calcium or similar substance, whereby it will be deprived of moisture.

Seventhly, relates to a "gasometer," which is placed in an elevated position to admit of an entrance underneath. The usual tank is substituted by a concentric narrow chamber, in which the balloon or upper part ascends and descends, and is counterpoised by weights and chains.

Eighthly, relates to "burners," which are made in preference of two rings of fire-clay, or other non-conducting substance, one placed within the other, and leaving a slit or fissure for the escape of the gas. Any other form may be adopted for burning gas, oils, and other such substances.

Ninthly, consists in steeping the coal used for gas, to remove the "chloride of sodium" contained therein in water, and then drying it before using it for the production of gas.

Tenthly, consists in making gas from bones. The bones are to be crushed, steeped in potash liquor, one pound to the gallon, and taken out and dried. The dry bones are then to be heated and distilled in the Patentee's retort. The ashes may be used for the production of prussiate of potash.

Eleventhly, consists "in the dilution of gases of rich illuminating power by hydrogen, of greater or less purity, or by light carburetted hydrogen, to any required standard of density."

Twelfthly, consists "in the treatment of the volatile parts of animal, vegetable, or mineral tar, for their re-solution into gasses for purposes of general illumination." Three iron vessels or retorts being set np, each provided with a furnace underneath, the first one is supplied with the gas producing volatile material, and the third one with water, to produce steam. The vapours from the first, and the steam from the third, are conducted into the second or middle vessel, which is filled with lumps of quick lime, coke, and scrap iron, and is heated to redness. The gas or gases resulting from the action of these matters, one upon another, is conducted into the main.

[Printed, 2s. 4d. See Mechanics' Magazine, vol. xlv., p. 510.]

A.D. 1845, May 10.—Nº 10,664.

WILSON, GEORGE FERGUSSON ; GWYNNE, GEORGE ; and WILSON, JAMES PILLANS.—"Improvements in treating certain inflammable matters, and in the manufacture of candles and soap."

These relate, first, "to treating or preparing cocoa-nut oil, lard, and tallow." Second, "to the manufacture of composite candles." Third, "to an improved application of artificial cold in candle making." Fourth, "to acidifying the residuum or 'bottoms' produced in the distillation of fatty and oily matters." Fifth, to distilling rosin in an atmosphere of steam. Sixth, to making soap from "distilled rosin."

Seventh, consists in distilling schist oil with the air excluded by means of an atmosphere of steam, or other suitable means. The heavier products are kept separate from the lighter or more essential. Both products may be rectified by repeated distillation.

Eighth, consists "in admitting steam into the retorts used in the distillation of schist for the purpose of facilitating the process of distillation, and improving the products thereof."

[Printed, 4d.]

A.D. 1845, May 24.—N^o 10,690.

CONSTABLE, JOHN.—(A communication.)—“ Improvements in “ the manufacture of gas for lighting and heating.”

“ This invention consists in manufacturing gas for the purposes “ of light and heat, by causing anthracite coal, when in a state “ of combustion, to be subjected to streams of air and steam, “ [at 600° F. in preference] so as to produce gas; and when “ so manufacturing gas, the invention further consists of em- “ ploying pearlash, together with anthracite, in order to obtain “ other saleable products.” “ The furnace used for this purpose “ may be similar in construction to a blast furnace employed in “ making iron from ironstone, mine, or ore, with only slight “ modifications to adapt the same to the purpose of gas-making “ from anthracite coal, by applying thereto streams of air and “ steam.”

“ The cinder obtained, where pearlash has been used, will be “ valuable as a manure; or the cyanide of potassium may be “ obtained therefrom by repeated washings in water, and the “ solutions evaporated to obtain the cyanide of potassium in the “ solid state, as is well understood. Or, in place of removing the “ cinders or ashes combined with the cyanide, as above explained, “ ammoniacal products may be obtained therefrom by passing “ stream through them, and condensing the product in diluted “ sulphuric acid or otherwise.” The gaseous oxide of carbon obtained by this process may be enriched by passing it through oil of turpentine in preference.

[Printed, 7d. See Repertory of Arts, vol. vii. (*enlarged series*), p. 227. Lon- don Journal (*Newton's*), vol. xxix. (*conjoined series*), p. 129. Mechanics' Magazine, vol. xliv., p. 109.]

A.D. 1845, June 23.—N^o 10,726.

DU BUISSON, MICHEL ANTONIE BERTIN BURIN.—“ New “ and improved methods for the distillation of bituminous schistus “ and other bituminous substances, as well as for the purification “ rectification, and preparation necessary for the employment of “ the productions obtained by such distillation for various useful “ purposes.”

This invention consists, first, in “ the arrangement and con- “ struction of furnace or apparatus for the distillation of schistus, “ and [any] other bituminous rocks.” This furnace is made of

circular brick-work, and is provided with the requisite number of fires placed round the circumference. The retort is of a conical or funnel shape, and when ready for use, has the appearance of one inverted cone being placed within a larger cone, in such a manner as to leave a space between the two cones for the reception of the schistus. Both cones are capable of being closed at their apexes, and their mouths, which are placed upwards, are connected together, and hermetically closed by a flat ring. The flame draft is caused to impinge against the lower portion of the outer cone, and ascending, turns over the upper edge and descends within the inner cone to the mouth of the chimney, which is placed in the interior, and as low as may be convenient. A third cone is so placed within the inner cone as to cause the flame draft, in its descent, to bind against the surface of the retort.

Secondly, in "the application to the said furnace or retort, (or "to the apparatus for which a Patent was obtained in England, "by Mollerat, of Dijon, sealed second May, One thousand eight "hundred and thirty-seven), of jets of steam, highly charged with "caloric." The steam so introduced may be heated by passing it through tubes heated to redness.

Thirdly, relates to "the purification, disinfection, and rectification of the bituminous oils (Nos. 1, 2, and 3)." "The "rectification and purification of mineral volatile oils" may be effected by passing steam through them, contained in a double cased vessel, at a pressure of three atmospheres. The outer casing is also filled with steam to preserve the heat in the inner one where the oil is placed.

The schistus used for the above purpose should be first reduced to pieces not larger than half the size of a man's hand, and be dried before being introduced into the retort. When the heat is applied to the retort "water is first distilled over, then oil and "water." The "carburetted hydrogen gas, which comes off at the same time, may be used for heating the retorts, or for the purpose of illumination. The effect of introducing heated steam is to reduce the time required for working off a charge, and to increase the quantity of oil obtained, but is not essential to the process. The "raw oil of schistus, and of other bituminous rocks, "petroleum, &c," will form various products by means of "fresh "distillation and rectification." First, a volatile oil called "mineral "spirit," of sp. gr. 0'80 to 0'81, which may be employed as a solvent in substitution for spirit of turpentine, and this oil by

suitable distillation may be divided into three oils. The "mineral spirit or oil of schistus," No. of density 0·80 to 0·81, when burned in suitable lamps, with a double current of air, will give a light superior to that of gas, without any unpleasant smell or smoke; the camphine lamp answers this purpose. Second, oil, density 0·86 to 0·87, may also be burned in a suitable lamp and chimney; it may also be mixed with "seed or fish oil," whereby its illuminating power will be increased, and not congeal so readily with cold. Third, a fatty mineral oil containing "parafine in large quantity," particularly applicable for "lubricating for machinery;" this oil saponifies very well. Fourth, "parafine;" this substance is obtained by crystallization from fat and thick oils. "Excellent candles" may be made of this substance. Fifthly, "grease of a deep brown colour," which is "superior to animal oil for lubricating carriages, machinery," &c.; it is without smell. Sixth, "tar," which is quite black, is very siccative and may be used in substitution of "siccative and mineral tar." Seventh, "soap," which is a result arising from washing or bleaching the oils by means of caustic soda. Eighth, sulphate of ammonia; and ninth, manure. The base of this product is formed from the residue of the distilled schistus, which is quenched, in order to preserve the carbon or animal and vegetable black contained therein. When ground to powder this substance is to be mixed with the ammoniacal compounds, with the soap herein obtained, with blood and other matters.

Previous to distilling or rectifying the raw oil, it should be agitated with a suitable quantity of sulphuric acid at 66 degrees, which will facilitate the precipitation of the tar. The supernatant oil should then be agitated with diluted caustic soda; these washings should be repeated. The oil now is nearly colourless, and may be introduced into the still, which should be provided with suitable pipes and cocks to admit of the separation into different vessels of the various oils successively distilled over; the residuum remaining in the still constitutes the grease referred to. The oil No. 1 may be purified, rectified, and disinfected for the purpose of lighting the interior of dwellings by agitating it with sulphuric acid at 66 degrees, then with diluted caustic soda, and finally with "hydrate of protoxide of iron," along with the caustic soda; when settled the oil is decanted off and conducted to the rectifying apparatus. The "thick oil, No. 2, and the fat oil, No. 3," may be treated after a similar manner.

The parafine may be obtained pure from the thick oils when bleached, by cooling and crystallization. The tar may be deprived of its acid by passing steam through it; the acid water so formed may be drawn off. "The bituminous schistus and other bituminous substances, such as clay slate," exist in large quantities in veins and masses like "coal," and are formed by the combination of the organic remains of animals and fish; also shells, and sometimes plants, united by a silicious cement in the proportion of about forty per cent. to the mass of schistus.

[Printed, 1s. 0½d.]

A.D. 1845, June 23.—Nº 10,727.

POOLE, Moses.—(A communication.)—"Improvements in apparatus for withdrawing air, gases, and other vapours."

These consist, first, "in withdrawing and forcing away smoke, gas, and all kinds of noxious vapours," by means of a "cylindric drum" or fan, worked by an arrangement of wheel work with a weight, which should be wound up every twenty-four hours.

Second, consists in placing "over each burner a chimney, constructed of two parts; the lower part is bell-mouthed, the upper is covered, there being openings beneath this covering." Two tubes are connected thereto, "at the ends of which are globes, into which the products of combustion pass and become condensed." The other part of the chimney is a tube, which may be connected to the fan apparatus above referred to, in order to carry off the smoke.

[Printed, 8d. See *Repertory of Arts*, vol. vii. (*enlarged series*), p. 97. *Mechanics' Magazine*, vol. xliv., p. 109.]

A.D. 1845, June 23.—Nº 10,733.

POLLARD, WILLIAM.—"Improvements in the production of combustible gases, and in the application of the same as fuel."

"This invention consists, firstly, in applying a blast of highly heated steam, in conjunction with atmospheric air, to convert solid fuel into combustible gases in appropriate furnaces, which gases are conveyed away, by suitable flues or pipes, to any place where they may be required to be burned. Secondly, in burning the said combustible gases with a blast of hot air to produce

“ heat, for all purposes for which solid fuel has hitherto been “ employed.

“ For generating the gases, the Patentee prefers a furnace upon “ the plan used in smelting iron ores, with a fuel chamber above “ the boshes of a sufficient height to secure the perfect decom- “ position of carbonic acid. The furnace shall beside be provided “ with close covers or slides at the charging plate, and with lateral “ flues and pipes to convey the combustible gases to their destina- “ tion. It is advisable to use a proper flux to convert the earthy “ parts of the fuel into a fusible slag, which may be run off as “ formed, or be tapped periodically, as may be found most con- “ venient. Open burning, or a mixture of open burning and “ caking fuel, is more convenient for generating gas than the very “ bituminous caking sorts. To produce the blast, I prefer using “ steam at a pressure of from two to three atmosphere,” and at a “ temperature of from 470° to 600° F. The blast of steam will “ always draw after it a sufficient proportion of air to effect a “ perfect combustion of the fuel.” “ The mode of applying the “ combustible gases so obtained as fuel, and the construction “ of furnaces for burning it may be varied according to “ circumstances.”

[Printed, 4d. See London Journal (*Newton's*), vol. xxviii. (*conjoined series*), p. 149.]

A.D. 1845, June 26.—Nº 10,739.

CROLL, ALEXANDER ANGUS.—“ Improvements in manufac- “ turing, measuring, and transmitting gas, and in obtaining “ ammoniacal and other products from the refuse matters of such “ manufacture.”

Consisting, first, in “ obtaining much of the gas for use for “ the purposes of light, which is evolved in manufacturing coke “ in coke ovens, by causing the gas to be withdrawn (by suitable “ means) at a part of the process of coke making in coke ovens.”

Secondly, consists in applying “ clay retorts ” to “ coke ovens,” so that the otherwise waste heat of such ovens may be the means of distilling coal in the clay retorts, and the gas therefrom conducted through the hydraulic main to be purified for the purpose of light.

Thirdly, consists in applying “ light springs ” to the “ valves ” of “ dry gas meters,” to prevent them being moved off their seats by being placed in varied positions.

Fourthly, in the mode of preventing a greater vacuity being produced than required in the retort, when the gas ceases to come off in such abundance as to fully supply the exhausting apparatus. A pipe is made to communicate with the main on either side of the exhausting apparatus, in which is placed a diaphragm having an opening, into which opening is fitted a conical plug valve, worked by a rod through a stuffing box in the pipe, and on the main between the exhausting apparatus and the retort is placed a siphon pipe supplied with water. When a tendency to too great exhaustion exhibits itself, the water is drawn up in one leg of the siphon and depressed in the other, and in the depressed leg there is a float which actuates the end of a lever, the other end of which is connected to the rod of the valve, which is thereby elevated and allows the gas to flow back and restore the equilibrium.

Fifthly, consists in distilling impure ammoniacal liquors and condensing the purer vapour of ammonia by passing the vapour first through a dry lime purifier, and then through pipes laid in troughs, and surrounded by cold water, a current of which is kept up.

Sixthly, consists "in mixing quick lime with tar, so as produce a combined product useful for manure. This mixture is to be formed in the proportion of one yard of fresh burned chalk lime to three hundred and fifty gallons of tar, the tar being placed in a suitable vessel, and the lime then added to it."

[Printed, 2s. 4d.]

A.D. 1845, July 2.—Nº 10,747.

HUTCHINSON, STEPHEN.—"Improvements in gas meters."

These relate to that class or description of gas meters called "dry meters," and consist in the use of "circular slide valves and boxes" for the purpose of directing as required the flow of gas into and out of the various chambers or bags employed for the measurement of the gas. Lubricators are fixed over the valves thereby preventing them getting out of order for a longer period than heretofore.

[Printed, 7d.]

A.D. 1845, August 9.—Nº 10,812.

HILLS, FRANK.—"Improvements in purifying gas for illumination, and obtaining a valuable product in the process."

These consist, first, in purifying gas by "passing it through a solution of sulphate or muriate of magnesia contained in a vessel similar to what is commonly called a wet lime purifier, having a stirrer or agitator."

Secondly, "in the employment of sulphate of lime (preferably precipitated) in lieu of the salts of magnesia, mentioned in the first process."

Thirdly, in a similar application of "the solutions of the bisulphates, or super-sulphates and sesqui-sulphates of potash or soda."

Fourthly, "in combining with a free acid (sulphuric acid in preference) or with the acid of the following salts," namely, the sulphates of lime, magnesia, iron or magnesia, muriates of lime, baryta, and acetate of lime, "in a vessel outside or separate from the purifier, the ammonia of the ammoniacal products absorbed by the water or ammoniacal solution while in the purifier, and returning the solution to the purifier again after the combination of its ammonia with free acid or the acid of the salts before mentioned, either in a continuous or intermitting process to absorb more ammonia, &c.; also in combining an acid with the ammonia absorbed from the gas by the water or ammoniacal liquor, which combination is to be effected in the purifier so as to fix the ammonia as fast as it is absorbed, and prevent its being carried off by the passing gas, thus obtaining a strong solution of salt of ammonia;" also in "the arrangement for collecting and passing away the gases set free when the combination of the acid with the ammonia of the ammoniacal compounds is effected in the purifier, without allowing them to mix with the illuminating gas by introducing the acid below a cone or inverted dish placed in the lower part of the purifier, and having a pipe at its top part for carrying away the gases;" also in driving or distilling off by heat, the gases and ammoniacal products absorbed by the water, and for returning the water in a continuous process to the purifiers again, or allowing it to run away after giving up its ammonical products, &c.;" also in placing two or more spreading discs in the purifier for the better distributing the gas, and also for the use of coke, clinker, or such like substances placed between the spreading discs for the purpose of presenting a greater surface of the purifying liquid to the gas to be purified; and, lastly, in refrigerating or keeping

" cool the purifying solutions by placing the purifier in cold
" water."

Fifthly, in "the purification of gas by passing steam into the
" gas main for the purpose of absorbing the ammoniacal products
" of the gas."

Sixthly, in "purifying gas by mixing with it the vapour of
" muriatic or other volatile acids to combine with the ammonia;
" also the application of suitable condensers for the condensation
" of the acids, and of the compounds formed by them with the
" ammonia."

Seventhly, in "the application of rotatory exhausting machines
" to the purpose of exhausting the gas from the retorts, and
" forcing it through a considerable depth of liquid in the purifying
" vessel without subjecting the retort to increased pressure."

[Printed, 1s. 5d.]

A.D. 1845, October 9.—Nº 10,862.

FRANCIS, HENRY.—"Improvements in the manufacture of
" gas."

These relate to apparatus "for manufacturing gas for private
" establishments," and the improvement first described, consists
in setting or supporting the retort on a "fire till made with
" openings," through which the heat may pass freely to the retort.

Secondly, in casting the retort door "with inclined planes or
" surfaces" upon it and the end of the retort with corresponding
fixed "lugs or projections." When the door is slightly turned
round by means of a key or handle, it becomes firmly pressed
against the mouth of the retort, and both faces being ground, will
form a gas-tight fit.

Thirdly, consists in making a vessel, one portion of which forms
" the tank for the ammoniacal liquor and tar;" and the other
portion "the hydraulic main."

Fourthly, consists in using the "gasometer tank" in the double
capacity of "condenser and gasometer." The condensing coil of
piping is carried through the water in the tank.

Fifthly, consists in attaching a cap valve to the gasometer by
means of a chain in such a manner that when the gasometer is
filled to a certain point it will lift the cap valve off the end of a
pipe and allow all further excess of gas to escape by means of a
pipe.

Sixthly, consists in making a purifying vessel into two compartments, into one of which wet lime or other such substance is placed, and into the other dry lime. Thus one vessel contains both modes of purifying gas.

[Printed, 9d. See Repertory of Arts, vol. vii. (*enlarged series*), p. 278. Engineers' and Architects' Journal, vol. ix., p. 185.]

A.D. 1845, November 3.—Nº 10,909.

BROOMAN, RICHARD ARCHIBALD.—(A communication.)—Improvements in gas meters.

These consist, first, in placing the flexible and expanding chambers of dry gas meters in a horizontal position within the casing, instead of perpendicular, and in such a position that the flexible or moveable part will not touch the sides of the casing. Suitable levers and weights are employed to counterbalance the weight of the vessels or chambers. Two or four of such measuring chambers may be employed. Suitable piping and slide valves are employed to direct the gas to its proper course, with suitable levers, cranks, &c., to take off the movements to the registering apparatus.

Second, "in protecting the levers, cranks, &c., of dry gas meters " from contact with gas." This may be effected by enclosing the valves and valve box in a gas-tight case, or by the addition of a side chamber or box through which the gas is discharged.

Third, consists "in the application of vulcanised caoutchouc and " gutta percha to the formation of expanding measuring vessels " in dry gas meters."

[Printed, 1s. See Mechanics' Magazine, vol. xlv., p. 1.]

A.D. 1845, November 18.—Nº 10,956.

FINLAY, JOHN.—"Improvements in raising and lowering gas " and other lamps, lustres, and chandeliers."

"This invention consists of a method or methods of supporting " such gas and other lamps, lustres, and chandeliers, as require to " be raised or lowered by atmospheric pressure, and the method " by which atmospheric pressure is applied to the said purpose is " as follows. I attach to the ceiling of the room from which the " lamp, lustre, or chandelier is to be suspended a rod carrying at " its lower end a piston. The lamp, lustre, or chandelier to be " suspended is connected to a tube which is made to slide air- " tight on the said piston. A vacuum being produced in the

" tube beneath the piston, the pressure of the atmosphere supports
 " the said lamp, lustre, or chandelier. The area of the piston,
 " and diameter of the tube in which it slides are proportioned to
 " the weight of the lamp, lustre, or chandelier to be supported."

[Printed, 7d. See *Repertory of Arts*, vol. ix. (*enlarged series*), p. 18.
London Journal (Newton's), vol. xxix. (*conjoined series*), p. 26. *Practical
 Mechanics' Journal*, vol. ii., p. 96. *Patent Journal*, vol. ii., p. 540.
Engineers' and Architects' Journal, vol. x., p. 58.]

A.D. 1845, December 4.—N^o 10,977.

LESLIE, JOHN.—"Improvements in the combustion of gas."

These consist of an arrangement of gas burner, which from its construction will afford a large supply of atmospheric air at the point of ignition of the gas by which the combustion of gas will be greatly improved. The burner is made of a series of tubes of metal, glass, porcelain, china, or other suitable material rising out of the supply tube, and forming by a succession of these tubes a circle or other figure, each tube being distinct from the other, but at the point where combustion is to take place they touch or nearly touch each other. The gas from each separate tube being ignited, the flames unite and assume a single, circular, or other form of hollow flames.

[Printed, 5d. See *Repertory of Arts*, vol. viii. (*enlarged series*), p. 20. *London
 Journal (Newton's)*, vol. xxviii. (*conjoined series*), p. 404. *Engineers' and
 Architects' Journal*, vol. ix., p. 231. *Patent Journal*, vol. i., p. 47.]

A.D. 1845, December 20.—N^o 11,006.

JOHNSON, JOHN ROBERT.—"Improvements in purifying gas,
 " and in the treatment of products of gas works."

These consist, first, "in separating from gas (used for illumination) those impurities which consist of ammonia and its compounds," by the use of "substances in the dry or solid form, and in a divided state." For this purpose the gas after leaving the lime purifier is caused to pass through one or more strata of any of the following substances, in an altogether dry state, or slightly moistened; namely, substances which possess the property of acting "in the manner of acids," such as "phosphoric, boracic, and other acids;" "salts with excess of acid, as the bisulphates of potash, of soda, and of ammonia; the biphosphates of these bases and other salts of this class; the salts of alumina and of some other earths;" also, "those substances which absorb the compounds of ammonia entirely, acid as

" well as base." " Metallic salts containing the requisite quantity of water are comprised in this class." " The salts of iron and manganese are preferred."

Secondly, consists in treating the " ammoniacal liquor of gas works" for the purpose of " preparing the salts of ammonia in a purer state." The liquor is placed in a vessel similar to an ordinary steam-boiler, and heated with a slow fire till the " hydrosulphuret of ammonia" is driven off; it is conducted into a vessel containing a solution of some substance which has the property of absorbing the sulphuretted hydrogen; the salts of iron and manganese possess this quality, as well as alkalies and lime. If the salts of iron or manganese be used, the sulphuret of the metal will be deposited, leaving a supernatant solution of a salt of ammonia; and if lime be used, the ammoniacal gas will be carried over to a second condenser charged with acid. " The liquid remaining in the boiler, consisting principally of carbonate of ammonia, may be treated in the ordinary way for preparing the salts." Sulphuret of lime in solution may be added to the steam-boiler in suitable quantity.

[Printed, 6d. See *Repertory of Arts*, vol. viii. (*enlarged series*), p. 87. *London Journal (Newton's)*, vol. xxxi. (*conjoined series*), p. 207. *Mechanics' Magazine*, vol. xlvi., p. 353. *Patent Journal*, vol. i., p. 76. *Engineers' and Architects' Journal*, vol ix., p. 283.]

A.D. 1846, January 20.—N^o 11,046.

BRAITHWAITE, JOHN.—" Certain improvements in heating, lighting, and ventilating."

[No Specification enrolled.]

A.D. 1846, February 3.—N^o 11,072.

BROWN, SAMUEL.—" Improvements in gas engines, and in propelling carriages and vessels."

[No Specification enrolled.]

A.D. 1846, March 25.—N^o 11,146.

WILSON, GEORGE FERGUSON; GWYNNE, GEORGE; WILSON, JAMES PILLANS; and JACKSON, JOHN.—" Improvements in producing light, and in materials and apparatus applicable thereto; and in treating fatty and oily matters."

[No Specification enrolled.]

A.D. 1846, May 27.—Nº 11,224.

DEFRIES, NATHAN.—Improvements in gas meters.

These consist in “constructing and applying rotatory valves “to dry gas meters, so that the gas is not allowed to pass into “the compartment where the apparatus or works are contained.” “Motion is communicated from the partitions to suitable axes, “and from them by suitable apparatus placed in an upper and “separate compartment of the meter to the axis of the valve, so “as to give it rotary motion, as has heretofore been done when “using other arrangements of rotatory valves where the gas is “allowed to come into the same chamber as contains the works “or apparatus for giving motion to the rotatory valve.”

[Printed, 11d. See London Journal (*Newton's*), vol. xxx. (conjoined series), p. 19. Patent Journal, vol. ii., p. 458.]

A.D. 1846, June 4.—Nº 11,238.

LOWE, GEORGE.—“An extension of a Patent granted to him “for his invention for increasing the illuminating power of such “coal gas as is usually produced in gas works; also for con- “verting the refuse products from the manufacture of coal gas “into an article of commerce not heretofore produced therefrom; “and also a new mode of conducting the process of condensation “in the manufacture of gas for illumination;” for the term of five years, to be computed from the 9th day of June 1846, being the expiration of the original Letters Patent.

[No Specification enrolled.]

A.D. 1846, June 22.—Nº 11,253.

HALL, WILLIAM MATHERS.—“Improvements in and appli- “cable to sliding gas pendants, lamps, lustres, and chandeliers.”

These consist, firstly, “in the use of mercury or quicksilver as “an hydraulic lute in sliding gas pendants in place of water, as “is usually employed.”

Secondly, “in the use of a tube of flexible or extensible ma- terials in the construction of sliding gas pendants, so as to “form a continuous tube in connexion with the metallic tubes “of the pendant, so that the moveable parts thereof may be “raised, lowered, or extended, without the necessity of using any “hydraulic lute.” Vulcanized india-rubber is preferred for this purpose.

Thirdly, "in the use of a tube of elastic material in the construction of sliding gas pendants, so that such tube may serve as a spring for supporting or partly supporting or counter-poising the moveable part of the pendant, and also as a continuous extensible tube for the due supply of gas. And I also claim the use of india-rubber or caoutchouc, or similar vegetable substances or preparations thereof, as springs for supporting or partly supporting the moveable parts of gas pendants, although such last material may not be in the form of tubes or to be used for the passage of gas."

Fourthly, "in the use of a series of two or more pulleys for increasing the sustaining power of the counterpoise of sliding gas pendants."

Fifthly, "in employing the shades which are usually suspended over the flame as weights or parts of the weight for counter-poising sliding gas pendants."

[Printed, 9d. See London Journal (*Newton's*), vol. xxx. (conjoined series), p. 188.]

A.D. 1846, June 29.—Nº 11,269.

SMITH, WILLIAM.—(A communication.)—"Improvements in gas meters."

This invention consists, firstly, "in the employment of a rigid central partition between two flexible diaphragms, which by means of cranks are made to actuate a central vertical shaft, and also the peculiar mode [by means of a crank], or any modification of the same for working the slides of the valves."

Secondly, "in constructing gas meters with three or more flexible diaphragms, so that the gas to be measured is kept away from or not allowed to come in contact with the working parts and joints, which are not therefore so liable to corrode or get out of order, particularly in passing a vertical shaft up the centre of the valve, and working the same direct, or without the intervention of any intermediate gearing."

Thirdly, "in constructing and applying periodical jumping or flirting indexes or counting apparatus; and also the employment of a spring clutch barrel, or any modification thereof, to an indicating or registering apparatus for gas meters, whereby the wheels or moving parts are made to 'flirt' or jump periodically."

[Printed, 1s. 1d. See London Journal (*Newton's*), vol. xxx. (conjoined series) p. 239.]

A.D. 1846, July 23.—N° 11,308.

HILLARY, AUGUSTUS WILLIAM.—“Improvements in the manufacture of gas”

“The Patentee claims, first, the mode of separating the condensable products from the carbonized gas. Secondly, the converting the bitumen or pitchy matter into gas without removing it from the apparatus. Thirdly, the mode of decomposing the matters by the aid of the steam coming from the pitchy or bituminous matters; and, lastly, the mode of obtaining from the coal the matters combined therewith, capable of enriching the gas, increasing its volume, and separating it, by one and the same operation.” The drawings show an arrangement of apparatus whereby the gas on being generated in the retort is caused to pass through a heated tube before proceeding to the condensers. The tar and other matters collected in the condenser are returned and passed through heated tubes partially filled with plates or bands of twisted metal, wherein the tar is decomposed and gas formed.

[Printed, 10d. See Patent Journal, vol. ii., pp. 617 and 641. Engineers' and Architects' Journal, vol. x., p. 88.]

A.D. 1846, August 17.—N° 11,339.

GRAY, JOSEPH. “Improvements in gas meters.” These consist, first, in “arranging and applying moveable partitions of dry gas meters on vertical axes, whereby the moveable partitions have no tendency to move in whatever position they may at any time be placed, unlessss pressed on by gas.” This is effected by making the hinge of the supporting inflexible portion of the partition at one side, and vertical so that the partition oscillates gently from side to side, the weight of it being carried by the hinge.

Second, relates to a mode of regulating the flow and pressure of gas at the change of stroke of the meter, and on its passage between the meter and burners, and consists in causing it to pass through a chamber divided by a flexible and weighted diaphragm. The gas elevates the diaphragm, but at the moment of change in the direction of the flexible partition of the meter, the pressure being then reduced the diaphragm descends, and thereby tends to keep up an uniformity of pressure in the pipes and burners.

[Printed, 1s. 4d. See Repertory of Arts, vol. ix. (*enlarged series*), p. 208. Patent Journal, vol. ii., p. 650.]

A.D. 1846, September 17.—N^o 11,377.

PALMER, WILLIAM. "Improvements in the manufacture of lamps and candlesticks, and in gas and other pillars and pipes." These consist, first, in substituting "steel or iron" stems for the brass, which has heretofore been used for supporting the chimneys of candle lamps; also the application of screws, levers, &c., for the purpose of adjusting the chimney, so that it may at all times be held central over the lamp; also "the dividing the currents of air into the chimneys" by the use of a perforated metal disc. Second, in a lamp for burning oil in such a manner that the burner, tube, and chimney will be floated and supported by a float in the vessel or glass, or lamp full of oil. Third, consists in "combining a thin shell of glass with a tube of metal, leaving considerable space between the external shell of glass and the inner tube, and filling such space with cement (plaster of Paris being preferred for that purpose). By this arrangement or combination very ornamental pillars and tubes may be constructed at small cost."

[Printed, 1s. 9d. See London Journal (*Newton's*), vol. xxxii. (conjoined series), p. 178. Patent Journal, vol. ii., p. 71A.]

A.D. 1846, October 8.—N^o 11,405

LOWE, GEORGE.—"Improvements in the manufacture of and in burning gas, and in the manufacture of fuel." These improvements consist, first, "in treating blocks of dried peat for the manufacture of gas by placing them in an open vessel, and immersing them in highly heated resin, pitch, or other hydro-carbonaceous matter," or in a closed vessel, from which the air has been withdrawn. The blocks thus saturated may be made into gas by being placed in retorts and treated as bituminous coal. Secondly, consists in the application of "revolving perforated pipes for supplying water or purifying liquor to the surface of coke contained in suitable vessels." Thirdly, consists "in the application of highly heated steam introduced into retorts when making gas from coal and other matters." The steam may be heated in pipes and introduced in suitable quantity into "that part of the retort most distant from where the gas passes off from the retort." Fourthly, in "adjusting the air to the outer flame of an argand gas burner by means of a screw or otherwise." The burner may have "a button to deflect the internal flow of air, the external air being directed by the shape of the chimney;" or

the burner may have “a cone to direct the external air to the “flame.” In both cases the supply of air is regulated by a screw or otherwise. Fifthly, consists in saturating blocks of dry peat for the purposes of fuel with resin, pitch, or other hydro-carbonaceous matter, by means of an open vessel and heat, and also by means of a closed vessel.

[Printed, 9d. See Mechanics’ Magazine, vol. xlvi., p. 579. Patent Journal vol. ii., p. 790.]

A.D. 1846, October 22.—Nº 11,421.

MACCAUD, ETIENNE ABRAM.—“Improvements in lamp and “gas burners.” “These consist in surrounding the lower part of “the burner (of the kind called argand) from the gallery or glass “carriage downwards, with a jacket or casing having numerous “very minute apertures, or made of suitable open textures (of “wire gauze in preference), whereby all the air by which the “combustion is supported, both that which passes through the “centre of the flame, and so acts upon its interior surface, and “also that which acts upon its exterior surface, is compelled to “pass through the same apertures in the jacket or casing. By “this arrangement no jets or partial currents of air affect the “flame; but the air is drawn in by the operation of the flame in “a minutely and uniformly diffused state from all parts of the “circumference of the jacket or casing during its passage, through “which its temperature becomes raised, so that the casing becomes “a reservoir or chamber charged with hot air. The combustion “of the gas being thus supported by the air of the reservoir only, “which by being free from jets, is calm and hot, a steady white “flame is obtained.”

[Printed, 5d. See London Journal (*Newton’s*), vol. xxx. (conjoined series), p. 338. Patent Journal, vol. ii., p. 819.]

A.D. 1846, October 29.—Nº 11,429.

WILKINS, WILLIAM CRANE.—“Certain improvements in “lamps and apparatus connected therewith, parts of which are “also applicable to raising of water.” These consist, first, “in “the employment in pressure lamps of atmospheric pressure to “raise the oil from a reservoir beneath the burner by means of an “air pump actuated by a rack and pinion. Second, in an im- “proved spring pressure lamp in so far as regards the combina-

"tion of the rack piston rod with the coiled spring fixed on
 "to the top of the oil reservoir and pinion. The spring actuates
 "a piston, and depressing the surface of the oil contained in the
 "reservoir, causes it to ascend a pipe which supplies the burner.
 "Third, in the improved wall or fountain lamp, described in so
 "far as regards the employment of the pinion and bevel wheels
 "to raise the cotton. Fourth, in the adaptation of the mode of
 "raising the cotton lastly referred to, to catoptric oil lamps.
 "Fifth, in raising and lowering the cotton adapted to lamps
 "with circular action ; in this case the turning of the glass-holder
 "is transmitted to the rack of the cotton holder through wheels
 "and a spiral worm. Sixth, in the employment in gas burners
 "having circles of holes for the escape of the gas, of the different
 "forms of construction described under the sixth head of this
 "Specification, that is to say, in so far as regards the use of the
 "inclined passages, the intercepting plates, the perforated concave
 "breakers, the conical air feeders having their highest parts on
 "a level with the top surface of the burner, but not touching it
 "in any part. Seventh, in heating the gas before reaching the
 "point of ignition, by causing it to flow through suitable chan-
 "nels near to the point of combustion. Eighth, in the applica-
 "tion to fishtail burners of a perforated intercepting plate.
 "Ninth, the improved form of glass-holder, which may be brought
 "nearer to or further from the burner at pleasure by the action
 "of a screw and boss. Tenth, the application to pumps used in
 "the lifting and forcing of water, of the form of piston repre-
 "sented, and before described. And, eleventh, in an improved
 "burner for railway carriage roof lamps. A tube brings the oil
 "to the cotton wick."

[Printed, 1s. 4d. See Mechanics' Magazine, vol. xlvi., p. 1. Patent Journal,
 vol. ii., p. 834.]

A.D. 1846, December 15.—N° 11,494.

DICKINSON, THOMAS FRIEND.—" Improvements in gas me-
 "ters." "The object of these improvements is to prevent such
 "meters from measuring incorrectly, which they are liable to do
 "if the surface of the water in the box or case is not kept inva-
 "riably at its intended proper level ; also to prevent any improper
 "use being made of a meter by tilting it." If too much water
 be introduced into the meter it will overflow the mouth of the en-

trance pipe, and escape by an opening provided for that purpose. If the meter be tilted back the level of the water will rise in the compartment at the back of the meter and flood the mouth of the entrance pipe in which it is situated, whereby the flow of gas will be wholly stopped ; if tilted forward the level of the water rises in front and floods the mouth of the egress pipe ; or the flow of gas may be stopped by a weight and lever, which will on the tilting of the meter forward actuate a valve and close the egress pipe.

[Printed, 8d. See London Journal (*Newton's*), vol. xxxi. (*conjoined series*), p. 12. Patent Journal, vol. iii., p. 100. Engineers' and Architects' Journal, vol. x., p. 290.]

A.D. 1846, December 31.—N° 11,516.

EDGE, THOMAS.—“ Improvements in the manufacture of gas meters.” “ The object of this invention is as far as possible to prevent, or at least very materially to retard, the destruction of gas meters from corrosion ; and for this purpose I construct my meters of plate iron, which has been previously coated with suitable metals, or an alloy of metals, which will protect from injury the plate iron so coated. The metals or alloys of metals which I employ for this purpose are tin and zinc. Any of the known means for coating plate iron with these or other metals, or alloys of metals may be employed ; also ” in “ making the solid internal parts of gas meters of alloy of metal having zinc and tin as the basis. For this purpose an alloy consisting of from fifty to seventy parts of zinc to from fifty to thirty parts of tin will be found to answer the purpose.”

[Printed, 8d. See London Journal (*Newton's*), vol. xxxi. (*conjoined series*), p. 174. Patent Journal, vol. iii., p. 148. Engineers' and Architects' Journal, vol. x., p. 247.]

A.D. 1847, January 26.—N° 11,545.

WALKER, RICHARD.—“ Improvements in the apparatus for the manufacture of gas for illumination, which said improvements are also applicable to the manufacture of other products of distillation.”

These “ improvements consist in breaking the immediate connection between the inner surface of the retort and the ascending pipe, by causing the upright or ascending pipe leading from the retort to the purifier to project or protrude inside the retort (say two inches) instead of the end of the pipe being flush or even

" with the upper side of the retort, which improvement allows
 " free egress to the gas, but prevents the tar or other carbonaceous
 " matter from ascending the upright pipe and choking up the
 " same."

[Printed, 5d. See London Journal (*Newton's*), vol. xxxi. (*conjoined series*),
 p. 357. Patent Journal, vol. iii., p. 240. Engineers' and Architects' Journal,
 vol. x., p. 291.]

A.D. 1847, January 28.—N° 11,546.

BRAITHWAITE, JOHN.—“ Improvements in heating, lighting
 “ and ventilating.”

These consist, first, in a suitable arrangement of apparatus for the purpose of burning the “smoke from gas or other lamps.” Over the chimney of the burner is placed a bell-shaped receiver, the top of which communicates with a pipe which carries round the smoke and other noxious exhalations, and delivers them again to the flame in order to their being consumed.

Second, consists in combining this apparatus with a suitable pipe for the purpose of conducting out of the apartment the “vitiated air.” The pipe may be laid between the ceiling of the room, and the flooring of the room above, and may be enclosed in another pipe supplied with fresh air from the outside. The air so heated may be passed through a suitable grating into the room above.

Third, relates to an improved burner, and consists essentially of three concentric tubes, the outer one being for the supply of gas, the middle one for the supply of the smoke brought down by the pipe, and the inner one for the supply of air. The inner tube is made bell-mouthed at the top so as to overlay the smoke tube, and thereby divert the current of smoke over the outer ring of flame.

Fourth, consists in regulating the flow of air to be heated by the pipe above referred to, or for other heating and ventilating purposes by means of a “thermostatic lever.” This lever is composed of two slips of metals soldered together possessing different degrees of expansibility. The different degrees of curvature which this lever assumes in consequence of being heated is caused to act, more or less according to its curvature on a rod and bell crank, which communicates by means of another wooden rod with the air valve, which is thereby opened or closed as required.

[Price, 10d. See Mechanics' Magazine. vol. xlvi., p. 217.]

A.D. 1847, March 16.—N° 11,623.

PETIT, JEAN JOSEPH HAZARD.—“ Improvements in the manufacture of oils, and in the apparatus for disinfecting and purifying oils and other inflammable or spirituous matters; and improvements in lamps and gas burners.”

[No Specification enrolled.]

A.D. 1847, March 22.—N° 11,630.

LESLIE, JOHN.—“ Improvements in the combustion of gas for the purpose of light.”

These consist, first, in the use of a purifying apparatus by which each consumer of gas may ensure the purity of the gas used, and may consist of any suitable vessel fitted up with trays furnished with various purifying agents, through which the gas supplied from the mains is caused to pass. The substances preferred to be used on the trays are sulphate or chloride of copper, lime, and acetate of lead.

Second, in “securing a more regular supply of gas to burners” by the use of a slide fitted with a pointer to indicate the amount of opening of the supply valve, and also by a dome floated in oil which opens or closes the exit valve according to the pressure of gas put upon it.

Third, consists in adapting to burners capable of passing various quantities of gas chimnies or “combustion chambers” of the configuration shown, and of dimensions in proportion to the quantity of gas passed.

[Printed, 7d. See Repertory of Arts, vol. x. (*enlarged series*), p. 285. Patent Journal, vol. iii., p. 455.]

A.D. 1847, April 15.—N° 11,654.

WHITE, STEPHEN.—“ A new means of producing gas, both as to apparatus and materials, from which the gas is produced.”

These improvements consist, first, in producing gas “adapted for the purpose of illumination,” through the “decomposition of water by bringing it into contact with charcoal or coke, or anthracite coal, and small thin plates of iron or small pieces of thin iron wire, or with charcoal or coke or anthracite coal and lime at a very high temperature, and thereby producing from

" such combination of materials so aerated, hydrogen gas and " oxyde of carbon gas mixed, and afterwards in combining such " compound gas with carburetted hydrogen gas (produced by " bringing oil or fat or tar, or certain other substances in contact " with heated materials) so as to produce ultimately a compound " gas" "fitted for the purpose of illumination." Three cylinders or retorts (in preference) made of cast iron and placed perpendicularly, are arranged in connection with each other. The first and second retorts have placed within them each a colander filled with thin "iron plates or wires," or lime, and are then filled up round the colander with "charcoal or coke, or anthracite coal," and heated by the usual furnace to a "white heat," or by means of "the apparatus known as Daniell's galvanic battery, the positive "and negative wires being conducted into the retorts." A small stream of water is then caused to flow into the upper end of the first retort, and allowed to percolate downwards, and be converted into steam. The resulting gaseous products arising from the action of the steam on the contents of the retort are caused to proceed downwards through the white hot mass, and through a pipe near the bottom of the retort into the second retort, and therein to ascend through its heated contents, and proceed by a connecting tube into the third retort. The third retort is kept at a "moderate red heat," and a suitable supply of oil, fat, or tallow, "or common tar, or some other substance of a similar character," is allowed to flow therein in a small continued stream, and to fall on a vessel called the "disperser," from which it runs down, in separate drops, a series of small chains suspended or coiled within the retort. The compound gas herein produced then passes on, through a pipe with its opening placed at the bottom of the retort to the condenser, and from thence to the gasometer.

[Printed, 1s. See London Journal (*Newton's*), vol. xxxiii. (*conjoined series*), p. 163. Patent Journal, vol. iii., p. 599.]

A.D. 1847, April 17.—N^o 11,661.

PALMER, GEORGE HOLWORTHY.—"An improved method or " mode of producing inflammable gases of greater purity and " higher illuminating power than those in use, and also in the " arrangement of the apparatus employed for the purpose, and " which apparatus may be applied to other similar purposes."

The Patentee claims, first, "the manufacture of gas by means of " a series of processes" described. These consist, first, in the

" use and application of a furnace constructed and arranged so as
 " to ensure uniformity of temperature to the retorts and regene-
 " rators employed for the production of the products of coal."
 The regenerators are smaller retorts filled with iron turnings or plates.

Secondly, in "the construction of the mechanical precipitator
 " and its use, in combination with the arrangements and appara-
 " tus for keeping the gaseous products cool in the manufacture of
 " gas." The "precipitator" is a rotating fan perforated with holes. The cooling apparatus may consist of a worm pipe taken through cold water.

Thirdly, in 'causing liquid ammonia in a comminuted or
 " divided state, to descend or pass through the crude gas
 " without subjecting the gas to increased pressure for that
 " purpose.'

Fourthly, in "application of steam in a series of chambers to
 " further purify the gas which has been deprived of a portion of
 " its ammonia by causing ammoniacal liquor to pass through it."

Fifthly, in "the using of atmospheric air to be blown through
 " the lime purifiers before they are opened for the removal of the
 " refuse lime, and the applications and adaptations of suitable
 " apparatus for that purpose."

Sixthly, in "the apparatus described as the ammoniacal filtering
 " towers, and the application thereof for the [purifying] nap-
 " thalizing and denaphthalizing of gas."

Lastly, in "the apparatus described as the mechanical precipi-
 " tator in combination with the cooling apparatus, and the
 " application thereof to precipitating the condensable products of
 " gaseous compounds."

[Printed, 11d. See London Journal (*Newton's*), vol. xxxii. (*conjoined series*),
 p. 337. Patent Journal, vol. iii., p. 547. Engineers' and Architects' Journal,
 vol. xi., p. 25.]

A.D. 1847, June 7.—N° 11,734.

CLARK, RICHARD.—" Improvements in the production of
 " artificial light, and in burners, lamps, and candlesticks."

These consist, first, in forming an argand burner with two deflectors, the lower one, which is placed under the flame and within the circle of jets, is made of "glass," in preference, and the higher one is placed above the jets for the purpose of spreading

the light. The introduction of a glass deflector reduces the amount of shadow. The parts of this burner may be variously arranged.

Second, relates to a novel construction of "ring burner." In this case the "burner consists of an interior and exterior cone " attached together at their lower edge by a ring." The space between the cones is divided by "a vertical cylindrical partition," which divides the gas into two streams, causing the one to cross the other at the point of issue. At the bottom of the partition is placed a stoppage, consisting of "a shelving piece or ring cap," pierced laterally with holes, through which the gas has to pass.

Third, relates to an improved "gas jet," and consists "of a tube, the upper end of which is provided with a boss or over-hanging part. Immediately below this part the tube is pierced with sets of holes," in such a manner that the gas when burning will "produce a flame resembling a lily."

Fourth, relates to an "improved batwing burner," and consists in "drilling two holes parallel to each other in a solid piece of metal, up to within a certain distance of the end of that piece of metal which is to form the burners, the continuation of the holes is then formed by drilling holes obliquely from a common starting point to meet the vertical holes." "This mode of piercing may be adapted to a solid thick disc of metal, and thus a ring of batwing jets may be produced."

This improvement relates further to "improvements in oil lamps," as also to "candle lamps."

[Printed, 9d. See London Journal (*Newton's*), vol. xxxii. (conjoined series), p. 98.]

A.D. 1847, July 3.—Nº 11,780.

HUNT, JOHN.—"Improvements in effecting the combustion of gas, oil, camphine, and other substances which are or may be burned for the production of light."

"The first part of this invention consists in the application of caps, discs, or plates of perforated metal or wire gauze, or perforated caps, discs, or plates of any other substance which is not injuriously affected by heat, to the tops of the chimnies or glasses of gas, oil, camphine, or other lamps." "Second, in the construction of the inner or outer cylinders of argand burners, together with the bottoms and rims of the glass

“holders of the said burners in one piece, whether the same be
“made by casting or stamping.”

[Printed, 6d. See London Journal (*Newton's*), vol. xxxii. (*conjoined series*),
p. 15. Mechanics' Magazine, vol. xlviii., p. 83. Patent Journal, vol. iv.,
p. 152. Engineers' and Architects' Journal, vol. xi., p. 114.]

A.D. 1847, August 19.—Nº 11,840.

BROTHERS, ORLANDO.—“Improvements in the method of
“manufacturing retorts, and in the machinery or apparatus
“connected therewith.”

This “invention applies more particularly to retorts to be
“employed in the manufacture of gas for illumination, and con-
“sists in manufacturing such retorts from plastic substances, by
“the use or employment of a contracting core or mould, upon
“which the retorts are formed, composed of inclined planes or
“wedges, and other apparatus connected therewith, and so
“arranged that, as such plastic substances contract in drying, the
“solid core or mould can be made to contract also, and, con-
“sequently, prevent such retorts from cracking or becoming
“distorted whilst drying, and previous to their being placed in
“the kiln.” “Retorts, of what is called the D shape,” are preferred.
The contracting “core or mould” is formed of several pieces, parts
of which may be withdrawn from time to time, and thereby allow
the plastic material to contract as it dries.

[Printed, 1s. 4d. See London Journal (*Newton's*), vol. xxxiv. (*conjoined series*), p. 317. Patent Journal, vol. iv., p. 313.]

A.D. 1847, November 4.—Nº 11,944.

LAMING, RICHARD.—“Improvements in manufacturing and
“purifying coal gas, and in treating a residual product of such
“manufacture; also improvements in preparing materials to be
“used in the purification of coal gas.”

This invention consists, first, in improvements “in the construction of furnaces used for the manufacturing of gas,” by the use “of pipes made either of iron, clay, or other suitable material, heated in flues or chambers in which they become surrounded by the products of combustion in their way from the oven to the chimney, and conducting heated atmospheric air into the passages between the fuel and the retorts.”

Secondly, consists in the modes of using chloride of calcium for the purification of coal gas. Sawdust may be powdered with dry

chloride of calcium, and then damped or wetted with water; or in preference, a strong solution of chloride of calcium, or of the muriates and sulphates of manganese, iron, and zinc, may be added to or absorbed by the dry sawdust, or other convenient matter. Such mixtures are to be used in the manner used for hydrate of lime. The Patentee prefers to form chloride of calcium by decomposing muriate of manganese, iron, or zinc, by means of lime, or of chalk when the latter will suffice. The oxides so formed need not be removed from the resulting chloride, as they are useful in the process of purification.

Thirdly, consists in the use of the carbonates of manganese, iron, zinc, and lead, however obtained for the like purpose. These carbonates should be damped and mixed or unmixed with sawdust, and may be obtained by adding ammoniacal or gas liquor to a muriate or sulphate of manganese, iron, zinc, or lead.

Fourthly, relates to the mode of obtaining from "ammoniacal" "liquor of gas works" a solution of sulphate of ammonia, and oxide or carbonate of lead. The gas liquor may be first distilled, then deprived of its hydrosulphuric acid by means of carbonate of lead, and finally the ammonia is converted into sulphate by means of white sulphate of lead. The lead is precipitated in the state of hydrated oxide or of carbonate.

Fifthly, consists in increasing the purifying powers of the aforesaid preparation of chloride of calcium, or of chloride of calcium and metallic oxide, or metallic carbonate, and also of the aforesaid metallic salt absorbed in solution in sawdust, by adding thereto oxide of manganese, iron, zinc, or lead obtained in a proper state from any other economical source; one or other of the oxides of manganese, prepared by heating the carbonate to near redness, with access of air, is used in preference for the above purpose.

Sixthly, consists in making carbonate of manganese; firstly, by decomposing the solution of muriate or sulphate of manganese with an equivalent quantity of gas liquor, from which the hydrosulphuric acid has been previously withdrawn; secondly, by adding carbonate of soda to a solution of waste residue from the makers of chlorine; thirdly, by boiling carbonate of magnesia, or magnesian limestone in powder, with sulphate or muriate of manganese in solution.

Seventhly, in processes for applying preparations of lead and zinc to the purification of coal gas, and in recovering them for

repeated use. The sulphate and oxide of lead which has been used in the purifier should be dried, and then exposed, in a furnace or on an iron plate for an hour or two, to a slow red heat, and by this means the sulphate or oxide will be restored.

"By Disclaimer and Memorandum of Alterations," "enrolled "the 5th of June, 1852," these parts of the foregoing invention included in this abridgment under the first head, the fourth head, the sixth head, and seventh head, are wholly disclaimed, and those parts described under the second head, third head, and fifth head are altered by striking out all that relates to the use of the salts of manganese, zinc, and lead.

[Printed, 2s. 2d. See Patent Journal, vol. v., p. 8. Exchequer Reports, vol. ix., p. 258. Law Journal (Exchequer), vol. xxiii., p. 80.]

A.D. 1847, November 11.—N^o 11,960.

MANSFIELD, CHARLES BLACHFORD.—"An improvement in "the manufacture and purification of spirituous substances, and oils "applicable to the purposes of artificial light and various useful "arts, and in the application thereof to such purposes; and in the "construction of lamps and burners applicable to the combustion "of such substances."

This invention consists, first, in "the manufacture from bituminous matters, by acting upon them at suitable temperatures, "of spirituous substances, which are so volatile that a current of "atmospheric air (at ordinary temperatures) passed through them, "may, when ignited, continue to burn with a luminous flame till "all or nearly all such substances are consumed. Also the "manufacture, from oil or tarry matters distilled from coal, by "acting on them, or on matters produced therefrom, at different "temperatures, of the products herein described [see Specification], "which I have called alliole, benzole, tolnole, camphole, mortuole, "and nitrobenzole; and here, by alliole I mean a spirituous substance which consists chiefly of hydrocarbonaceous matter more "volatile than benzole. By benzole is meant a spirituous substance "whose boiling temperature is chiefly between eighty and one "hundred degrees, and is such that if cooled to twenty degrees "below O° it will become in part solid. By tolnole is meant so "much of the light oil of coal tar as may remain after the separation "of the alliole, benzole, and camphole. By camphole is

" meant an oil lighter than water, which, when of the ordinary temperature of the air, will not take fire on the surface on the approach of a lighted match, and whose boiling temperature lies chiefly between one hundred and forty and one hundred and eighty degrees. By mortuole is meant an oil whose boiling temperature lies chiefly between two hundred and two hundred and sixty degrees, obtained by the method above described. By nitrobenzole is meant a fragrant oil prepared from the oil of coal tar by the action of strong nitric acid."

Second " consists in the purification of the spirituous substances and oils which I manufacture from coal tar by treatment with chemical agents according to principles laid down, depending on the nature of the spirituous substance and oils aforesaid, and of the impurities desired to be removed. I also claim the use of nitric or nitrous acid, of nitromuriatic acid, and of chromic acid, and the salts of those acids, in the purification of empyreumatic and bituminous volatile oils, and the purification of certain of the oils manufactured from coal tar by digestion with alkalies, in the manner above described, and by distilling them, so that their vapour is passed over lime in the manner above described, and the purification of a spirituous substance obtained from coal tar by congelation and pressure, which substance so purified I call absolute benzole."

Third consists " in the application of hydrocarbons and of volatile spirituous substances to the purposes of artificial light, by appropriate mixture with their vapour of other gases or vapours, videlicet, firstly, by mixture, in the manner above described, of a current of atmospheric air or of other non-inflammable gases with the vapour of spirituous substances, which are so volatile and of such nature, that a current of such air or gases, of the ordinary temperature or slightly heated, having been passed through a reservoir containing the spirituous substances, may burn with a luminous flame at a distance from the reservoir without the application of heat directly to the reservoir, or by mixture, in the manner herein described, of a current of inflammable gas or gases with the vapour of such spirituous substances as have not before been so applied, videlicet, such volatile hydrocarbons as are manufactured according to the principles of the first part of this invention; also the mixture of hydrocarbons or volatile oils and

" spirituous substances with such spirits as will dissolve them or
 " mix with them (without being distilled with them), and when
 " mixed will retain them in solution in proportions suitable to
 " burning in lamps for the purpose of artificial light."

Fourth consists "in the formation of a burner with a slit jet,
 " the breadth of which may, or may not, be adjustable by a
 " moveable part, such burner being so connected with a lamp
 " that a part of the mixed volatile oils and spirits supplied as fuel
 " in the lamp may be converted into vapour by the heat evolved
 " by the combustion of a previous part of the same fuel, and that
 " the vapour may be conveyed to the burner and then consumed."

Fifth consists "in the construction of burners suited to the
 " combustion of illuminating gas, or of air or gas charged with
 " the vapour of spirituous substances, so that the size of the
 " slits or jets from which such air or gas issues for combustion
 " may be adjusted by the movement of a moveable part or parts of
 " the burners."

The Specification of this invention is of great length, and as it
 refers to so many points of improvements it had better be
 consulted.

[Printed, 2s. 9d. See *Repertory of Arts*, vol. vii. (*enlarged series*), pages 1
 and 107. *Mechanics' Magazine*, vol. xlix., p. 43; and vol. l., p. 529.]

A.D. 1848, February 8.—N^o 12,053.

BURLEIGH, RICHARD CLARKE.—" Improvements in burners
 " for obtaining or producing light and heat, and in apparatus to
 " be used therewith."

These consist, first, "in making the holes of the burner
 " (argand) horizontal, or nearly so, in place of vertical, as is
 " usual, and in employing therewith a cone or cylinder for guiding
 " the currents of air up the outside of the burner; and also a
 " disc of metal for the purpose of deflecting the air that passes
 " up the inner or centre part of the burner, and causing it to
 " pass in a horizontal direction over the stream of gas as it
 " issues from the horizontal holes of the burner. These parts
 " are employed in conjunction with a globe or shade with curved
 " sides, and by this arrangement of parts I am enabled to dis-
 " pense with the chimney hitherto requisite for the proper com-
 " bustion of gases on the argand principle, and to produce (in

" the centre of a flattened globe) a horizontal disc of flame,
" which is not so liable to smoke, when exposed to regular drafts
" of air, as flames of the ordinary 'shape.' Such a burner may
" be advantageously used for heating purposes."

Secondly, "in constructing a burner upon the principle and in
" the form of an ordinary argand burner, with a small jet in the
" middle. The burner is screwed on to a vertical tube, the
" upper end of which is brought to a fine edge, so that it may be
" screwed against the inside of the burner immediately below
" the small jet hole," the effect of which is to stop off the gas
entirely from the argand holes and allow it still to flow through
the jet in the middle.

Third, "when the argand wick [of an oil or spirit lamp] is
" secured in its proper position by any of the ordinary plans,
" insert a small loose tube inside the inner tube, in such a
" manner that the upper edge of the short tube, which is turned
" over and made trumpet-mouthing for the purpose, may rest
" upon the upper edge of the wick, so as to slightly curve it
" outwards. By this means, when the wick is ignited, it will
" only burn at its outer edge and surface."

Fourth "relates to a means of guiding the upward current of
" air to the burner, to prevent the injurious effects of cross drafts.
" This may be effected by subdividing the pillar or stem into
" longitudinal chambers, through which the interior of the burner
" is supplied with air, and by applying subdividing strips of
" metal to the under side of the cone, the outside of the burner
" may also be supplied."

Fifth, "relates to improved arrangements of apparatus for regulating the flow of gas to the burners." These consist generally
" in introducing a valve into the consuming pipe, which, under
" ordinary circumstances, rests on the mouth of the entrance
" pipe, but under the effect of excessive pressure will be raised or
" floated up till it closes or partially closes the mouth of the exit
" pipe."

Sixth, consists "in balancing the moving parts of dry meters,
" such as the diaphragm and its appendages, by means of a lever
" and weights connected to the shaft or spindle of the diaphragm
" plate; also in constructing and working the valves, as well as
" the adaptation of a regulating chamber, whereby the bobbing,
" jumping, or unpleasant effect produced on the light by the

" change of the valves and in the motions of the measuring chambers is avoided. The valves may be reversed by the action of a vibrating and tumbling arm. The gas is caused to pass through an expanding chamber in its way to the burners, and the expanding portion of the chamber being attached to the entrance valve will close or partially close it on the extra pressure being put on the gas."

Seventh, " as regards wet meters, the Patentee claims the use of an oscillating vessel, to which are adapted filling pieces, whereby a great quantity of the water or liquid usually employed is dispensed with, and the level of the liquid does not determine the correctness of the measurement; also the use of a regulator chamber."

[Printed, 2s. 1d. See London Journal (*Newton's*), vol. xxx. (*conjoined series*), p. 19. Patent Journal, vol. ii., p. 458.]

A.D. 1848, February 14.—Nº 12,066.

WATSON, JOHN, and CART, EDWARD.—" Improvements in the manufacture of gas."

" The object of this invention is to combine apparatus with an ordinary hot-air stove, for generating gas in proportion to the supply required, and so to arrange the parts that the supply of material to the retort will be cut off by the filling of the gas-holder, so that if the supply of gas from the retort be not consumed, the further feed to the retort will be cut off." " A feed pipe conducts the liquid for gas manufacture from the holder to the retort, and a self-acting tap is connected with the gas holder by means of two rods, and which are moved together at a joint. The volume of gas required for combustion being supported by a quantity of the liquid flowing into the retort, the proportion is regulated by the tap in exact ratio with the current consumption, and whatever decrease or increase is made in the number of lights during the apparatus being in operation causes the gas holder to ascend or descend, until the self-acting tap admits only the quantity of liquid to the retort commensurate with the flames burning."

[Printed, 9d. See Repertory of Arts, vol. xii. (*enlarged series*), p. 249. London Journal (*Newton's*), vol. xxxiii. (*conjoined series*), p. 187. Mechanics' Magazine, vol. xl ix., p. 179. Artizan, vol. vi., p. 274. Patent Journal, vol. v., p. 350. Engineers' and Architects' Journal, vol. xi., p. 342.]

A.D. 1848, April 20.—N^o 12,131.

CLEGG, SAMUEL.—“ Improvements in gas meters.”

This invention consists, first, in “the dividing of the gas which passes through a meter into two or more portions, and ascertaining the whole quantity by measuring part thereof when under pressure, instead of measuring all the gas which passes through the meter, as heretofore.”

Second, consists in “the making of the inner circle drum of a water meter water tight, that being in water it may be buoyant, and prevent the weight of the said drum pressing upon the axis thereof.”

“The flow of gas may be directed into two pipes of known area, that from one of the pipes being measured, and the flow through the other calculated. In order to compensate for the loss in the flow of the gas caused by the pressure required to drive the water meter, the Patentee introduces two compensating hollow vessels or hoods which may vibrate on a common centre, one of which is enclosed in another larger hood, which is supplied with gas at the pressure at which it leaves the drum. According as that is reduced the hood within becomes elevated and the other hood depressed, in doing which it closes and regulates the openings of the valves for the escape of both the measured and unmeasured gases, so that the equilibrium will be restored. The same principle of measurement may be applied to dry meters.”

[Printed, 10d. See Repertory of Arts, vol. xii. (*enlarged series*), p. 298. Artizan, vol. vii., p. 81. Patent Journal, vol. vi., p. 43. Engineers' and Architects' Journal, vol. xi., p. 398.]

A.D. 1848, May 26.—N^o 12,165.

SOLOMONS, ABRAHAM, and AZULAY, BONDY.—“ Improvements in the manufacture of gas tar, charcoal, and certain acids.”

Consisting, first, “in the manufacture of gas tar, charcoal and ashes, from wood carbonized and destructively distilled by means of steam of high temperature.” The outer cylinder used for the above purpose may be made of cast or wrought iron, within which is placed another cylinder, and again within it is introduced a casing, to be filled with the wood to be car-

bonized. The steam, heated in a coil pipe to about 572° F., and at a pressure of about from one half to one atmosphere, is passed into the cylinders. The distilled products are allowed to escape by a pipe and conducted to a refrigeratory, or otherwise.

Secondly, "in the manufacture of gas tar, charcoal, and acids "from peat, turf, sawdust, spent bark, tan, spent dye woods, the "residuum of the manufacture of beetroot sugar, potato starch, "and other vegetable substances carbonized and distractively "distilled by steam heated to a [suitable] temperature." For this purpose it is proposed to use "several smaller casings," suitably separated from each other within the inner cylinder. These smaller casings may also be placed in an ordinary retort and heated by fire. Such substances may be compressed into blocks and carbonized by suitable means; or they may be placed in a retort which is made to rotate, the retort being provided with four or more ledges projecting about three inches along the interior of the cylinders.

[Printed, 9d. See Mechanics' Magazine, vol. xlix., p. 547. Practical Mechanics' Journal, vol. i., p. 297. Artizan, vol. vii., p. 24. Patent Journal, vol. vi., p. 76.]

A.D. 1848, June 6.—Nº 12,176.

BARNES, RICHARD.—"Improved apparatus for manufacturing "gas for illumination, part of which improvements is applicable to "retorts for distilling pyroligneous acid and other similar pur- "poses." These improvements relate chiefly to apparatus for the use of "small consumers;" and consist, first, in applying to a retort placed on end a mouthpiece, which may be rendered gas-tight by means of a water joint. Secondly, in a compact construction and arrangement of "the refrigerator, condensor, wash vessel, purifier, "and gasometer." The "purifier" is placed "inside the gaso- "meter." Thirdly, the "water joint," for closing the mouth of the retort, may be applied to retorts used for distilling pyro- ligneous acid, and other similar purposes.

[Printed, 1s. 1d. See Mechanics' Magazine, vol. xlix., p. 573. Practical Mechanics' Journal, vol. i., p. 229. Artizan, vol. vii., p. 107. Engineers' and Architects' Journal, vol. xii., p. 23.]

A.D. 1848, June 16.—Nº 12,190.

EMMOTT, GEORGE.—"Improvements in the manufacture of "fuel, and in the construction and arrangement of furnaces,

" flues, boilers, ovens, and retorts, having for their object the " economical application of caloric, the manufacture of gas for " illumination, and the consumption of smoke and other gaseous " products." " This invention relates, firstly, to the manufacture " of fuel by effecting the carbonization of coals in ovens or retorts " wholly or partially closed at pleasure."

Secondly, in the application of " valves," " dampers," " hy- " draulic cups," " an exhausting apparatus," " fan," " blower," " or any suitable machinery by which an uniform draught can be " regulated to the [coke] ovens, or to the pipes and flues con- " nected therewith, in such a manner as to prevent the escape of " the gaseous products to the atmosphere [when desired], and at " the same time carry them forward through a series of pipes to " a gasometer or receiver, where their various components may be " separated, the gas suitable for illuminations be purified accord- " ingly, and its application to a variety of useful purposes effected " at pleasure."

Thirdly, " relates to the combination of a coke oven, or retorts " with a steam boiler, (or other vessel used for the purposes of " evaporation) under one combined system of furnaces and flues; " thus by fixing a coke oven at the side of or near to a steam " boiler or other vessel to which heat is applied, and the flues be- " ing so arranged in connection with each other that so soon as the " delivery of the gaseous products to the gasometer or receiver is " complete, the heat or caloric resulting from the further carboni- " zation of the fuel in the oven is conveyed along flues beneath, " around, or through the steam boiler previous to its delivery to " the chimney shaft.

Fourthly, relates to " smoke burning," (see Abridgments on that subject).

" Fifthly, relates to retorts for the distillation of carburetted " hydrogen or common gas in connection with the furnaces and " flues of steam boilers and other vessels to which heat is ap- " plied." " For this purpose I place a retort or retorts made of " fire-clay, fire-bricks, or iron, at the side of or between steam " boilers for the purpose of wholly or partially carbonizing the " coals, or for manufacturing gas cokes." " The gaseous pro- " ducts arising from such carbonization or dry distillation I con- " vey by the common modes of gas making to a gasometer or " receiver, but the gaseous products and caloric resulting from

" the combustion of the fuel in the furnaces beneath the retorts, instead of being permitted to escape to a chimney, is wholly conveyed by means of flues at any convenient angle with the side of the boiler in the fire-box, or into the flues thereof, where the effective application of such products for generating steam, or for other purposes is secured. The gas collected in the receiver or gasometer I make use of as fuel in the following manner:—At the farther end of the fire-box, and upon or near to the bridge wall thereof, I erect a wall of perforated fire-bricks, or of fireclay tubes, or of fireclay blocks, perforated with as many orifices or apertures in each as may be necessary. The upper surface of these blocks or wall of blocks being raised a few inches above the level of the grate bars at the back of the fire-box. Into the apertures of these fireclay blocks I introduce gas from the gasometer or receiver, which gas igniting at the orifices on the upper surface of the blocks forms an entire sheet of flame across the end of the fire-box, and any gaseous products or opaque smoke arising from the combustion of coals or other materials in the furnace coming in contact therewith is effectually and entirely consumed."

[Printed, 2*s 4d.* See Mechanics' Magazine, vol. xlix, p. 622. Practical Mechanics' Journal, vol. i., p. 283. Artisan, vol. vii., p. 180. Patent Journal, vol. vi., p. 183.]

A.D. 1848, June 26.—N^o 12,194.

CLARK, RICHARD.—" Certain improvements in gas burners and in candle lamps and other lamps." These improvements consist, first, " in entirely enclosing gas burners within a glass vessel or chamber, so as to protect the flame from external draughts, and cause the air which supports the combustion of the gas to be thoroughly warmed or heated before it arrives at the burner; also ornamenting the glass chamber in order that the metallic part of the burner may be hidden from view as much as possible, and yet at the same time the passage of the light may not be impeded or its quantity diminished.

" Secondly, the various improvements in gas burners shewn and described, and also the improved modes of supporting the chimneys and glass shades, and preventing them from becoming accidentally displaced."

" Thirdly," in "constructing burners whereby an irregularity or

" want of uniformity in the pressure of gas from the mains is prevented from injuriously affecting the flame.

" Fourthly," in " dividing the spring of a candle lamp into two parts, and also adapting the tubular or other piston shewn in figure 21 to the upper part of the spring ; one of the objects of both these improvements being to facilitate the placing of the spring in the candle after it has been removed for some necessary purpose ; another object of dividing the spring into two parts and separating them by disks, being to prevent the melted tallow or grease from getting into and clogging up the lower portion of the spring, which therefore need never be removed from the tube."

" Fifthly," in " constructing night lamps with a curved or hemispherical bottom, so as to cause the melted tallow or grease to drain down to the lowest point and be consumed."

" Sixthly," in " constructing oil or other lamps whereby the flame is or may be perfectly protected from external draughts, and yet be abundantly supplied with air to support combustion. I claim also the manner of adapting an oil cup to the lower part of the lamp, as shewn for the purpose of receiving any overflow, and also the improved mode of constructing the stuffing box, as well as the method of attaching glass handles to spindles for any of the purposes to which such handles may be applicable."

" Seventhly," in " constructing pressure lamps with a strainer or percolating surface adapted to or made in the lower end of the supply pipe, for the purpose of preventing any impurities from passing into the interior of the lamp and clogging it up ; also making a valve or valves in the piston or plunger of pressure lamps, for the purpose of allowing any air that may have accidentally got under the piston or plunger to escape therefrom ;" also, "the method above shewn and described of regulating the supply of oil to the burner by means of a small plug or screw, by screwing or unscrewing which the capacity of the passage may be regulated at pleasure ;" also, in " constructing pressure and other lamps with short wicks for the purpose."

" Eighthly," in " regulating the supply of oil to railway lamps by means of a plunger or spindle, whereby the flow of oil may be regulated to a nicety, or stopped altogether, if required."

" Ninthly," in " making lamps or lanthorns with reflectors, which may with facility be detached from them or adapted

" thereto when required ; and also magnifying by means of a lens
" the rays of light upon the focus of a reflector."

" Lastly," in " counterbalancing chandeliers by means of
" weights inclosed in the tubing, which forms the channel of
" communication from the main to the burners in the case of gas
" lamps, and which only serve to support the chandelier when oil
" is used."

[Printed, 1s. 6d. See Mechanics' Magazine, vol. I., p. 23. Practical Mechanics' Journal, vol. i., p. 253. Artizan, vol. vii., p. 131. Patent Journal, vol. vi., p. 126.]

A.D. 1848, July 6.—N^o 12,203.

ROBERTSON, JOSEPH CLINTON.—(A communication.)—" Im-
" provements in the manufacture of gas for illumination, and of
" the residual products into articles of commerce." Consisting,
" first, in the manufacture of gas for illumination from rosin, by
" mixing it with alkaline and vegetable fibrous substances [such
" as potash, soda, or lime, in conjunction with sawdust or other
" similar substance], and exposing these crude materials to the
" action of heat in cases placed in retorts, and passing the result-
" ing volatile or gaseous products through retorts, one, two, or
" more filled with lumps of coke, or lime, or broken brick, or
" other like materials in a fragmental and incandescent state."

" Second, in the separation and collection of the oil or oleage-
" genous matters contained in the volatile or gaseous products
" resulting from the first distillation of the said crude materials
" by passing the same through water" contained in a suitable
tank.

" Third, in the manufacture from the said oil of an antifriction
" grease, by the admixture of it with lime and zinc, or some alloy
" of zinc," "in the proportion of about five parts of zinc, or
" alloy of zinc to each hundred parts by weight of the oil."

" Fourthly, in obtaining a spirit from the above oil, which may
" be used both for illumination and as a varnish or vehicle for
" color, by distillation and rectification. In first distilling the oil,
" care is taken not to raise the temperature higher than is just
" sufficient to give the oil, which is originally of a yellowish co-
" lor, a brownish or tawny appearance. The spirit which comes
" over from this first distillation is afterwards rectified by redis-
" tilling it once, twice, or oftener, in combination with a small

“ quantity of lime in each instance until it attains any required degree of whiteness. The proportion of lime to spirit which is found to answer best in practice is about three-quarters of an ounce of the former to each pound weight of the latter.”

[Printed, 3d. See London Journal (*Newton's*), vol. xxxiv. (*conjoined series*), p. 37. Mechanics' Magazine, vol. I., p. 43. Artizan, vol. vii., p. 131. Patent Journal, vol. vi., p. 137.]

A.D. 1848, July 26.—N° 12,222.

KING, JOHN, and MEDHURST, HENRY.—“ Improvements in gas meters.” These consist, first, in “ apparatus which acts on and is acted upon by the diaphragms or moving partition of the meter,” whereby the “ flexible part of the diaphragm is first caused to move, whilst the inflexible part of the diaphragm is held back.” This is effected by attaching a cross bar to the upper end of the axes of the moveable diaphragm, one end of which bar is embraced by the two arms of a weighted lever. “ This lever turns upon an axis affixed to the back of the meter, and the weighted end of it always acts as a resistance to the forward movement of the diaphragm plate, thus obliging the flexible part to return or move first from the extremity of its action, by which means a greater uniformity of registration and steadiness of light is obtained.”

Second, in substituting for the “ worm ” usually employed for transmitting motion to the wheels of the index, “ two or more of the peculiarly shaped pieces, the form of which is clearly shewn in the drawing.” “ The peculiarity of this arrangement consists in this, that in whichever way the axis [upon which the pieces are fixed] is turned, the wheel will be turned in the direction of the arrow.”

[Printed, 1s.]

A.D. 1848, August 22.—N° 12,251.

CROLL, ALEXANDER ANGUS.—“ Improvements in the manufacture of gas, and in apparatus to be used in transmitting gas.”

These improvements consist, first, “ in manufacturing gas, whereby retorts, capable of being fed or charged at each end (at the same time), are employed (in the usual manner), the gas being conveyed off at only one end,” instead of having a rising pipe at each end.

Secondly, "in the mode of employing steam in the manufacture of gas." A long retort may be charged at one end, namely, the end farthest from the rising pipe, with coke, and the other end with coal, from time to time, say at every five hours; steam is then introduced at the end charged with coke, and allowed to flow in for about the first three hours of each charge.

Thirdly, "in purifying coal gas by employing sulphurous acid gas." The gas is caused to pass through a suitable number of vessels containing a solution of sulphurous acid. The sulphur is precipitated abundantly in the form of "flowers of sulphur;" the gas may thereafter be washed with water, and then passed on into the purifiers.

Fourthly, in "the mode of arranging apparatus for transmitting gas." When the gasholder is at a distance from the works, the Patentee proposes to place the exhausting apparatus near to the gasholder, and in order to prevent the exhauster acting too powerfully on the main, he inserts a branch pipe from the gasholder to the main, provided with the usual governor for equalizing the pressure of gas in mains. The gas flows back from the gasholder into the main and retorts, and thereby restores the desired equilibrium.

[Printed, 4d. See *Repertory of Arts*, vol. xiii. (*enlarged series*), p. 233. *London Journal (Newton's)*, vol. xxxiv. (*conjoined series*), p. 196. *Mechanics' Magazine*, vol. l., p. 212. *Artizan*, vol. vii., p. 183; and vol. ix., pp. 73, 124, and 194. *Patent Journal*, vol. vi., p. 216. *Engineers' and Architects' Journal*, vol. xii., p. 150.]

A.D. 1848, September 21.—N° 12,270.

LILLIE, JOSEPH.—"Machinery or apparatus applicable for purifying and cooling liquids, and for purifying, condensing, and cooling gases."

In so far as this invention relates to the subject of "gas," it consists, first, in causing the gas to be "purified, condensed, or cooled," to enter a suitable vessel by an opening at the bottom to proceed upwards through a false bottom, perforated all over with holes except that part immediately over the mouth of the ingress pipe, and to flow out by a pipe placed at the upper end. Within the vessel is placed a "bowl or distributor," which may be caused to revolve at a high speed; this bowl is supplied with suitable liquor, lime water, for instance, which escaping through the perforations showers down through the gas, and escapes in an

impure state by a small pipe at the bottom. The gas may be caused to pass through more than one of such vessels if required. Secondly, consists of a vessel, in which is put the purifying liquor, in the centre of which an inlet pipe for the gas is caused to revolve. At the lower end of this pipe and under the liquor are attached two bent branch pipes open at their ends; as these pipes revolve backwards, as it were, the gas flows from the openings and through the purifying liquor.

This invention further relates to the cooling of "worts or other liquids."

[Printed, 1s. 10d. See *Repertory of Arts*, vol. xiii. (*enlarged series*), p. 307. *Mechanics' Magazine*, vol. I., p. 285. *Artizan*, vol. vii., p. 208. *Patent Journal*, vol. vi., p. 245.]

A.D. 1848, October 19.—N° 12,290.

HILLS, FRANKE CLARKE.—“Improvements in treating certain “ salts, and gases, and vapours.”

These consist, first, “in mixing pitch or coal tar, deprived of its “ naptha, with breeze, small coke or coals, to be used in conjunction with ordinary coals to make gas.”

Secondly, “in running thick tar or pitch into retorts, kept red hot, and preferably partly filled with coke or other substance, to make heated surface, and over which surface the generated gas is to pass.”

Thirdly, “in passing the vapour of naptha obtained from the distillation of the tar through red-hot retorts, preferably containing coke, so as to form a highly illuminating gas.”

Fourthly, “the mixing the waste gas from wood (in the process of making pyroligneous acid), with gas obtained from the rich hydro-carbons or from coals.”

Fifthly, relates to evaporating and concentrating solutions of ammonia,” “saline solutions,” and “sulphuric acid,” by causing them to percolate down through coke or breeze, clinkers, or other such substances, or broken glass, pebbles, &c. contained in a tower.

Sixthly, relates to absorbing ammoniacal or other vapours by passing them through a chamber or column containing trays of sawdust, tan, cocoa-nut fibre, or pumice stone, or through a cylinder with a revolving centre, provided with brush wood, or furzes, or matting. The liquid for absorbing the vapours is to run into the tower at the top, in any required quantity, and is to

percolate through the sawdust; or the ammonia may be caused to pass through vessels resembling dry lime purifiers containing breeze, or coke, or other suitable substance, soaked with suitable acid, such as sulphuric acid.

Seventh, "in extracting or clearing noxious or other vapours from ammoniacal saturators, gas purifiers, and absorbing vessels, and from the materials used in them, by causing a stream of steam, atmospheric air, or other suitable gas or vapours, whether heated or at common temperatures, to pass through them, and thence to a furnace or chimney."

Eighth, "preventing the formation of explosive mixtures from gases drawn from the vessels and materials above described, by mixing a sufficient quantity of steam, or of atmospheric air, carbonic acid, or other suitable gases, as to render them in-explosive."

Ninth, relates to "introducing the liquids either into the stills or the absorbing vessels, so as to distribute them equally over the surface," and consists, first, in placing a series of pipes, perforated on each side with holes, at the top of the vessels, equally divided over the whole surface, about eighteen inches apart; the liquid employed is supplied to these pipes in an intermittent manner, by means of a "tumbler," which is a vessel in two compartments, supplied with the liquid which alternately overbalances to one side or other, as each compartment fills.

Tenth; a similar result is obtained by admitting the liquid through a hollow upright spindle, closed at the bottom, and provided with one or more pipes radiating from it, and extending to the sides of the vessel; these pipes are perforated on one side only, so that as the liquid escapes it causes the spindle and arms to rotate.

Eleventh, consists "in depriving coal gas of its 'naphthaline,' by passing the gas (after it has been purified and before it enters the gasometer), through a vessel similar to a wet lime purifier, in which is placed a solution of caustic potash and lime, or caustic soda and lime."

[Printed, 4d. See Mechanics' Magazine, vol. l., p. 403. Patent Journal, vol. vii., p. 117.]

A.D. 1848, October 26.—Nº 12,297.

LONGMAID, WILLIAM.—"Improvements in treating the oxides of iron, and in obtaining products therefrom.

"For this purpose I take oxide of iron, either native or artificial, " and the more pure the better, pulverize it finely, and then mix " it intimately with some carbonaceous matter." "I prefer to " mix the oxide of iron with from twelve to fifteen per cent., by " weight of the carbonaceous matter, or such a quantity of it that, " when the process is complete, a slight excess of the carbonaceous " matter will remain in the retort. Any description of carbon- " acious matters, which are not too volatile or expensive, and " which can be mixed intimately with the oxide of iron, may be " used, but when not in a fluid state they must be pulverized; " those which I have found most convenient and advantageous " for the purposes of my invention, are tar and resin." "Having " prepared the mixture of materials to be used, I put into a retort " or close vessel, or chamber, in which it can be heated to a low " red heat without being subject to the action of any atmospheric " air." "The heat is to be raised gradually until the whole of each " retort becomes uniformly of a low red heat, at which temperature " it must be kept until about two hours after the combustible " volatile products have ceased to be evolved." "The material " produced by calcination in a retort in this way will be found to " be black or dark colored, and forms a good pigment for many " purposes." "The calcination will cause a volatile oil to be " evolved from the contents of the retort, which I convey by a " pipe to a condenser or other convenient vessel, in which it may " be condensed and retained. The calcination will also cause the " evolution of an inflammable gas suitable for the purposes of " illumination, which I convey by a pipe from the condenser or " vessel to a gasometer of any ordinary construction, or it may be " burned to assist in heating the retorts."

[Printed, 3d. See Repertory of Arts, vol. xiii. (*enlarged series*), p. 375. London Journal (*Newton's*), vol. xxxiv. (*conjoined series*), p. 265. Mechanics' Magazine, vol. l., p. 426. Patent Journal, vol. vii., p. 39. Engineers' and Architects' Journal, vol. xii., p. 179.]

A.D. 1848, November 2.—N^o 12,312.

BIDDELL, GEORGE ARTHUR.—"Improvements applicable to "gas burners." These improvements relate to "the regulation "of the supply of gas to burners, and also to the shutting-off the "gas from them." This is effected by "exposing to the heat of a "flame substances whose rates of expansion are unequal (say "brass and steel); the difference of expansion of these substances

" is made to act upon a valve or cock (of any suitable construction) so as to regulate the flow of gas to the burner, according to the variation of the pressure, as the rates of expansion of these substances vary with the height of flame; and the apparatus is so arranged, that when the flame is extinguished the substances contract in cooling, and allow the valve to close and shut off any gas that might otherwise have escaped. The valve used in preference for this purpose is a spindle, which will answer the purpose of a regulating valve as well as a stop cock." The metals heated by the flame are in communication with a lever, to one end of which the supply valve is suspended, and the varying degree to which the metals are heated elevate or depress the valve as required.

[Printed, 9d.]

A.D. 1848, November 25.—Nº 12,342.

DE FONTAINE MOREAU, PIERRE ARMAND LECOMTE.—(A communication.)—" Improvements in the process of, and in the apparatus for treating fatty bodies, and in the application of the products thereof to various useful purposes."

That part of this invention which relates to the distillation of fatty bodies consists, first, in causing steam of low pressure to be heated to a high degree of heat, by passing it through pipes heated to nearly redness, or by passing it through a pipe containing charcoal or coke heated to redness, or by injecting it into a bath of molten metal, and passing it alone or mixed with the produced gases, while so heated, through the substance to be distilled contained in a suitable vessel. The distilled vapours may be collected in suitable condensers. The vessel containing the fatty bodies may be also heated by the direct action of the fire, or by placing it within another vessel, which the Patentee calls his " balneum mariac." This vessel contains molten metal (lead is preferred), which conducts the heat in a gentle manner to the inner vessel. Drawing No. 2, attached to this specification, shows the Patentee's mode of applying steam and heat to a double still, by which the oily vapours are passed from number one still on to the second, and from thence to the condenser. In all cases there is provision made on the mouths of the pipes and in the vessels by means of holes or slits, and by perforated partitions, to insure the proper dispersion of the steam as it passes through the fatty bodies.

This invention relates, further, to the "acidification and solidification of fatty bodies; to the use of troughs, worms, and condensers, made of granite or enamelled metal, or earthy substances;" "bleaching, disinfecting, and solidifying of vegetable tallow by means of azotic acid;" treating "vegetable" and "carnauba wax;" clarifying fatty acids; treating oleine and stearine; solidifying oleic acid or oleine; making "yellow transparent candles;" the "mode of heating presses;" "employing the refuse substances obtained from the distillation of fatty bodies;" and, lastly, the application of "an enamel" to apparatus.

[Printed, 11d. See London Journal (*Newton's*), vol. xxxv. (*conjoined series*), p. 240. Mechanics' Magazine, p. 525. Patent Journal, vol. ix., p. 92.]

A.D. 1848, December 21.—N° 12,380.

WILDSMITH, JAMES HENRY STAPLE.—"Improvements in the purification of naptha, likewise called wood spirit, and hydrated oxide of methyl, pyroligneous acid, and eupion, and certain other products of the destructive distillation of wood, peat, and certain other vegetable matters, and of acetate of lime and shale, and in the purification of coal tar and mineral naptha, likewise spirit, being the products of fermentation."

This invention consists, first, in the reduction of the "carbon-hydrogen" contained in such matters (to which they owe their unpleasant odour) by adding such substances to them as will yield their oxygen readily. These substances consist, in preference, of permanganate of potash, bichromate of potash, chromate of potash, or other similar highly oxidized bodies. The quantities of each to be used must depend upon the quality of the substance employed. Acids may be added to the salts employed, which will hasten the process, but does not improve it.

Second, consists in forming a portion of the tank in which the mixture is made, of "glass or some transparent substance, so that the tank or vessel may be permeable to light, the action of which is essential to the process."

[Printed, 4d. See Repertory of Arts, vol. xiv. (*enlarged series*), p. 101. Mechanics' Magazine, vol. l., p. 620. Patent Journal, vol. xviii., p. 175.]

A.D. 1849, January 3.—N° 12,398.

KNAPTON, WILLIAM.—"Certain improvements in the mode of manufacturing gasometers or gas-holders."

" This invention consists of combining flexible or pliant material
 " (such as cloth, leather, or other substances suitably rendered
 " impervious to gas at ordinary pressures, as is well understood,
 " by being prepared with a solution of india-rubber, vulcanized
 " india-rubber, gutta percha, or otherwise) with wrought-iron plates,
 " or other rigid or inflexible materials, by which a gasometer or
 " gas-holder is made to work without the use of tanks or vats for
 " holding water. The bottom of this gasometer may be made of
 " riveted iron, and should be elevated from the ground on
 " pillars. A circle of flexible material is attached by its lower
 " edge to this bottom, while its upper edge is similarly attached
 " to the lower edge of an ordinary gasometer suspended and
 " counterpoised over the bottom. This gasometer is made a
 " little larger than the bottom, so that it will on descending pass
 " the bottom and proceed downwards towards the ground, taking
 " with it the flexible portion, till the dome of the gasometer
 " reaches the bottom, or nearly so."

[Printed, 6d.]

A.D. 1849, January 23.—Nº 12,436.

REECE, REES.—" Improvements in treating peat, and obtaining
 " products therefrom."

" This invention consists, first, in causing peat to be burned
 " in a furnace by the aid of a blast" of air of about two, or two
 and a half pounds on the inch, " in such manner that inflammable
 " gasses, tar, and other products may be evolved and collected
 " therefrom."

" The tarry and other liquid products pass away by a pipe, and
 " are received in any suitable receivers. The tarry products
 " may be treated according to the second part of this invention,
 " and the other products may be made available for evolving
 " ammonia, wood spirit, and other matters, by any of the existing
 " processes applicable to the same. Either hot or cold blast may
 " be used."

" The second part of this invention relates to obtaining a pro-
 " duct of peat, which is called paraffine. For this purpose I take
 " tar obtained from peat in the manner above described, or tar
 " which has been obtained from peat by distillation, and such
 " tar being freed from water I place in a suitable still, and cause

“ the same to be heated, and I distil off about half the quantity
 “ at as low a temperature as it will come over, and then I
 “ distil over the remainder into a second receiver. The product
 “ received in the second receiver will be found to consist of the
 “ products I call paraffine, and paraffine liquid, and a small quan-
 “ tity of volatile hydro-carbons. The paraffine will be found in
 “ crystals, which I separate from the liquid paraffine by hair or
 “ other fine sieves, and then melt the crystals, and run the same
 “ into moulds about two inches deep ; and the cakes thus ob-
 “ tained I subject to pressure in the manner of pressing stearine,
 “ by which I separate the more fluid portions.”

Paraffine so obtained may be freed from colour by re-distillation and by washing with “ water and free steam.”

[Printed, 5d. See Repertory of Arts, vol. xvi. (*enlarged series*), p. 337. London Journal (*Newton's*), vol. xxxv. (*conjoined series*), p. 96. Mechanics' Magazine, vol. li., p. 91. Practical Mechanics' Journal, vol. ii., pp. 121 and 122; and vol. iii., p. 262. Patent Journal, vol. vii., p. 180.]

A.D. 1849, February 8.—Nº 12,458.

PARISH, HENRY HEADLY.—(Partly a communication.)—“ Im-
 “ provements in safety and other lamps, and in gas burners.”

“ The air to support combustion is admitted through a per-
 “ forated plate, through a cylinder of wire gauze, and then
 “ through a cone of wire gauze. There is another cylinder of
 “ wire gauze, having within it a strong glass of the internal form
 “ shown, or it may be of a convex form, as shown in the drawing
 “ by dotted lines. The chimney passes up through a perforated
 “ sheet of wire gauze, which is slightly coned, through which
 “ chimney the heated products pass into the upper part or chim-
 “ ney, which consists of a cylinder of wire gauze, and the
 “ continuation of metal having a disc of wire gauze over the top.
 “ By this arrangement of parts, not only will the lamp be made
 “ more safe, but the combustion will be greatly improved. It is
 “ preferred, and it is an improvement, that the metallic gauze
 “ used for this and other safety lamps should be subjected to the
 “ process of electro-coating, so as to combine all into one ; and
 “ further, that the outer cylinder of wire gauze which is over
 “ the glass in the present lamp should be electro-coated with
 “ silver, as beneficial results are thereby obtained in reflecting the
 “ light.”

Second, " relates to gas burners. The gallery for the glass is " so arranged as to bring the lower end of the glass chimney on " a level with the top of a conical ring of wire gauze;" and over the burner is placed another conical ring of wire gauze. By this arrangement the atmospheric air will be better applied and the gas better consumed.

[Printed, 6d.]

A.D. 1849, February 8.—N° 12,460.

WEBSTER, JAMES.—" Improvements in apparatus for manufacturing gas."

The mode described consists in using " one perpendicular retort with a flat bottom and divided into three compartments." On the bottom of the first compartment is deposited the naphtha required; the fumes arising pass up through charcoal, with which the compartment is about half filled, and are then caused to enter the upper end of the second compartment, wherein are placed iron bars, down which melted rosin is allowed to trickle. The united vapours or gases then pass into the lower end of the third compartment and ascend through a mass of iron or charcoal, and on through a pipe to the condenser. The flat bottom of the retort is suitably heated.

[Printed, 6d. See Repertory of Arts, vol. xiv. (*enlarged series*), p. 208. Mechanics' Magazine, vol. li., p. 141. Patent Journal, vol. vii., p. 216.]

A.D. 1849, February 28.—N° 12,491.

CROSSLEY, HENRY.—" Improved modes or methods of an apparatus for heating and lighting, for drying substances, and for employing air in a warm or cold state for manufacturing purposes."

This invention relates, firstly, to an improved form of boiler for heating water."

Secondly, to a new mode "of constructing the masonry of furnaces."

Thirdly, "in applying steam of high pressure to the generation of steam of low pressure."

Fourthly, in a mode "of applying heat to the boiling of sugar."

Fifthly, relates to a gas stove which the Patentee calls "ronald." The heated air arising from the gas burned in a small chamber,

rises into a box divided into several compartments, which cause it to ascend and descend several times before it escapes by the exit pipe to the chimney. Through this box are placed perpendicularly many small pipes open at both ends. The cold air will constantly flow upwards through these pipes and escape at the top in a heated state.

Sixthly and seventhly, relates to an apparatus for drawing off gas as it is generated from the retorts. This may be effected by means of a pump constructed after the manner of a gasometer. The dome is worked upwards and downwards by a rack and pinion, or by other suitable means. The inlet pipe is provided with a valve which opens upwards, and the exit pipe with a corresponding valve which opens downwards. When the dome or vessel inverted in the tank is drawn upwards, it sucks the gas from the retort, and on the return stroke drives it forward through the exit pipe. The valves open and close in the usual manner. Undue "draft" on the retort may be prevented by allowing gas to return from the exit main to the inlet pipe. The requisite quantity to be returned in order to restore the proper equilibrium may be regulated by a cock placed on the connecting pipe worked by a lever, one end of which being connected to the cock, and the other actuated up and down by the elevation or depression of a small gasholder. This gasholder being placed in connection with the inlet pipe will be elevated and depressed according to the degree of pressure on the gas contained therein, and it is so adjusted in point of weight, that as the pressure is reduced to near zero the gas is drawn therefrom, and by its depression the lever is acted upon, thereby opening the cock and permitting the requisite return of the gas. The Patentee proposes to employ such an apparatus "in lieu of a " meter for regulating the quantity of gas passed through it by " attaching to the same suitably arranged indices and a time- " piece."

Eighthly, to other "improved gas exhausters." In these modes the gas is exhausted from the inlet pipes and passed on to the exit main by means of fans, which may be made after the usual manner of making fans, or by the rotating of hollow arms or pipes curved throughout, or bent at the ends, and enclosed in a proper case.

Ninthly, consists in reflecting, directing, and concentrating the light and heat generated by the combustion of gas by placing

behind the gas burners suitable reflectors. These reflectors may be supported by a ball and socket joint, which will admit of them being moved and directed as required.

Tenthly, relates to a "divergent coal fire stove," "and to a "revolving coal fire stove with revolving reflector or shield" to which the Patentee gives the name of "garrow."

Eleventhly, to a "concentric gas burner," and to a "conical concentric gas burner." Concentric rings are placed within each other on the same plane, or the inner rings may be elevated in succession about the outer ones. Every intermediate ring supplies the gas to the burners, the other rings supply the air or oxygen gas required for combustion. A revolving reflector suitably coloured may be attached to reflect the light, and the glass chimney may be suitably coloured.

Twelfthly, relates to "a form of gas burner" called the "ronald." In this case the end of the gas pipe is supplied with several bent branch pipes with burners of a fish or swallow tailed form inserted in their ends. The jets are caused to impinge against each other obliquely towards the centre. The glass shade used is of a saucer form, and either entirely closed at the bottom or it may have apertures for the admission of air. A screw button may be placed over for the purpose of expanding the flame."

Thirteenthly, to three varieties of gas burners called "Russell." The peculiar nature belonging to these burners consists in providing means for opening the apertures for the emission of the gas to the burners, more or less, according to the degree of brilliancy, desired to be given to the light. To effect this, one part of the ring burner may be screwed up or down, whereby the slit for the emission of gas will be widened or contracted.

Fourteenthly, relates to an apparatus for burning tallow, wax, or other substance of which candles may be made, called "an argand candle lamp." This apparatus consists in making the wick in a "tubular form," and providing for a supply of air to pass up the tube to assist in the combustion. The wick may be manufactured with filaments of zinc or similar metal intertwined with the fibrous material used.

Fifteenthly, relates to a "hydro extractor."

Sixteenthly, relates to modes of applying air in a warm or cold state for manufacturing purposes, such as heating or evaporating, and,—

Seventeenthly, to the application of a revolving pipe or pipes called an "air wheel," perforated with holes, through which the gas flows into and through the lime liquor contained in the purifier. The emission of the gas causes the rotation of the wheel, or it may be driven by machinery.

[Printed, 1s. 3d. See Mechanics' Magazine, vol. li., pp. 210 and 235. Patent Journal, vol. vii., p. 236.]

A.D. 1849, March 5.—N^o 12,504.

DEFRIES, NATHAN, and PETTIT, GEORGE BROOKES.—"Improvements in applying gas to heat apparatus containing fluids, and in heating and ventilating buildings; also improvements in gas fittings and apparatus for controlling the passage of gas."

This "invention consists, first, "of applying the heat of gas to water in a bath, by causing that portion of the water on which the heat of the gas is for the time being acting to be divided over an extensive surface, by employing pipes, tubes, or vessels, (offering extensive surfaces as compared with their contents) in connexion with the bath, and by causing the heat of gas to be applied to such pipes, thereby causing the water as it becomes heated to flow into the bath, the hotter water being replaced by colder water flowing from the bath to the pipes. Another part of" this "invention for heating the water of a bath by gas" consists in obtaining "a more extended surface than the area of the bottom of the bath would offer, and yet not materially to increase the quantity of water to be heated. For this purpose the bottom of the bath is formed of an undulating character."

Second, as regards ventilating buildings "where gas lights are used, tubes or pipes or passages are to be employed to carry away the heat from the room or place in which the light is obtained, up which pipes the heated currents will flow freely, and by having openings in such rising pipes air from the apartments or rooms through which such pipes may pass will flow, and thus ventilate such places."

Third, "consists" in "surrounding such pipes or passages so heated with gas, with water, or it might be with other fluid, by applying external pipes or vessels surrounding those up which the heated products flow, by which the surrounding liquid will become heated, and may be drawn off at any part for use; or

" the same, where the quantity of gas employed is considerable,
 " may be so arranged as to cause the water so heated to circulate
 " in pipes or tubes suitably arranged for circulating water, in order
 " to heat rooms or apartments."

By Disclaimer registered A.D. 1849, September 5, the Patentees disclaim that portion of the title contained in the following words:—

" Also improvements in gas fittings and apparatus for controlling
 " the passage of gas."

[Printed, 6*d.*.]

A.D. 1849, March 14.—N^o 12,517.

SWAN, ALEXANDER.—" Improvements in heating apparatus,
 " and in applying hot and warm air to manufacturing and other
 " purposes where the same are required."

This invention refers chiefly to improvements connected with steam boilers, evaporating leys, and to drying and desiccating by means of hot air. See Abridgments on Bleaching, Printing, and Dyeing. Figures 8 and 9 in the drawing show the Patentee's mode of "distilling coal or peat." The retort used in this case is so set up that the flame draft from the fire is carried round and round its circumference several times in a spiral flue before it reaches the return flue.

[Printed, 1*s.* 4*d.* See Mechanics' Magazine, vol. li., pp. 282 and 361. Patent Journal, vol. vii., p. 250.]

A.D. 1849, March 20.—N^o 12,532.

PARKINSON, WILLIAM.—" Improvements in gas and water meters, and in instruments for regulating the flow of fluids."

These consist, first, "in placing the aperture through which the water is supplied into the meter at an elevation above the proper level of the water therein, and in placing the mouth of the overflow pipe at or about the centre of the water in the meter." The water is first introduced into a separate chamber, and then flows through an aperture into the meter, which prevents it being tampered with by siphons, &c. The mouth of the overflow pipe being placed near the centre prevents the water from being materially affected by the meter not being placed on a perfect level.

Second, consists "in the adaptation of the wheel or drum of the ordinary gas meter to the purpose of measuring and registering quantities of water; that is to say, in so far as regards the combination of the drum or wheel of the ordinary gas meter with a trough of water suspended by an adjusting screw, in which trough the drum or wheel revolves, and with an instrument or instruments for regulating the flow of the water into the said meter and trough." The supply of water is regulated by means of a float, which actuates a slide valve of a peculiar construction.

Third, consists of an "improved ball cock" for regulating the flow of fluids. "In its general appearance this apparatus resembles what is commonly known by the name of "Lambert's ball valve tap," differing from it chiefly in this, that the valve or plug takes into a solid recess at the back of the tap instead of pressing against a flexible diaphragm, as in Lambert's tap."

[Printed, 7d.]

A.D. 1849, March 26.—N° 12,536.

WHITE, STEPHEN.—"Improvements in the manufacture of gases, and in the application thereof to the purposes of heating and consuming smoke; also improvements in furnaces for economising heat and in apparatus for the consumption of gases."

This invention relates, first, "to a special and particular arrangement and combination of parts and things constituting an apparatus" for producing the compound gas obtained from water, iron, charcoal, coke, or anthracite coal with oily substances, or pit coal, more particularly as regards the placing of one or more divisions in that retort in which the carburetted hydrogen is produced from the rosin, pit coal, or other similar substances, for the purpose of extending the length of heating surface, and thereby insuring a more perfect combination between the "carburetted hydrogen and the hydrogen gas, and oxide of carbon gas?" The retort containing the coke, iron plates, wire, &c., into which the water is introduced, is made with an internal pipe or flue for the more efficient heating of it.

Secondly, consists in producing "oxygen gas" by means of heating nitrate of soda or potash contained in crucibles, and enclosed in a retort. The residual potash and soda may be

revived by saturating them with dilute nitric acid. The Patentee also claims as novel, the application of the gases produced in the water and coke, &c. retort, above referred to, to the purposes of heating and burning smoke in whatever way applied.

[Printed, 2s. 1d. See Mechanics' Magazine, vol. li., p. 309; and vol. lv., p. 23.
Patent Journal, vol. viii., p. ii.]

A.D. 1849, August 1.—N° 12,718.

DE CAVAILLON, FLORENTINE JOSEPH.—“ Improvements in “ obtaining carbonated hydrogen gas, and in applying the products “ resulting therefrom to various useful purposes.”

“ The following materials may be used either as a substitute for “ [to the extent of fifty per cent.] or in combination with pit “ coal (namely), bones, kitchen stuff, gravies, the residuum of “ suet, tallow, or other animal waste, the residuum of seeds or “ other oleaginous matters, spent bark, sawdust, and also sawdust “ or pulverized or reduced wood that has been used for the “ purification of oils, also peat or turf, either pulverised or in “ small pieces.”

“ These materials must be first consolidated or caused to adhere “ together, either by means of some gummy or resinous matter, “ or by some empyreumatic oil, or the molasses of sugar, and “ then introduced into retorts and distilled, in the same manner “ as pit coal is operated upon in ordinary gas works.”

The following products are obtained: “ Carburetted hydrogen “ gas, animal charcoal, animal and vegetable charcoal in powder, “ applicable for the preparation of manure; empyreumatic oil “ mixed with tar, ammoniacal water.”

“ The materials employed for the preparation of a powder for “ purifying the gas, and the manner of using the same, are as “ follows:—Sulphate of lime is the principal ingredient, as it “ forms the base of the mixture, one half of which consists of the “ substance which is commonly known as plaster when calcined. “ I prefer to use old plaster which has once been used for build- “ ing or other purposes.” “ I particularly prefer those sulphates “ which are derived from the manufacture of composition or “ stearine candles.” “ In combination with the sulphate of lime, “ either natural or artificial, I employ, [in convenient proportions] “ coke finely pulverized, and sifted river or other sand not too “ fine; pulverized vegetable charcoal, pulverized animal charcoal,

" sawdust, pulverized peat or turf, spent bark (tannin) reduced to powder, sulphate of lead mixed with oxide of lead." "All the materials must be pulverized, and when they are all properly mixed together they must be wetted with dilute sulphuric acid or acidulated water weighing from six to seven degrees of Beaumé's acid weighing apparatus." "If the sulphate of lime employed in the purifying powder is artificial, and obtained from some manufacture or process, then it will not be necessary to add any sulphuric acid; but it will be always necessary to wet the mass, but this may be done with common water."

The purifying powder may be placed on shelves and covered with lime, and the gas be caused to pass upwards through the two layers.

[Printed, 4*d.* See London Journal (*Newton's*), vol. xxxvi. (*conjoined series*), p. 257. Mechanics' Magazine, vol. lii., p. 115. Patent Journal, vol. viii., p. 262.]

A.D. 1849, September 20.—N^o 12,773.

EDWARDS, DAVID OWEN.—"Improvements in the application of gas for producing and radiating heat."

"These are, firstly, the constructing of gas burners of pipe clay or other argillaceous material perforated with holes, and adapted [in any suitable manner] for the production and radiation of heat. Secondly, the constructing of stoves of earthenware or other argillaceous material with a double casing, for the passage of the air, in combination with burners constructed and arranged as above described, for the production and radiation of heat by the combustion of gas. Thirdly, the constructing of ovens or cooking chambers of earthenware or other argillaceous material, in combination with burners constructed and arranged as above described, for the production and radiation of heat by the combustion of gas."

[Printed, 1*s. 4d.*]

A.D. 1849, October 18.—N^o 12,814.

HULETT, DAVID, and PADDON, JOHN BIRCH.—"Improvements in gas meters and in gas regulators."

These consist, first, in an improvement on the curved pipe or siphon used to convey the gas into the measuring drum, by carrying both legs higher than usual, and enclosing the ends of

" both in covers inaccessible to the water." "A short tubular piece is left projecting downwards from the bottom of the syphon," for the purpose of receiving any condensed moisture.

Secondly, in "the addition to gas meters of an indicator for exhibiting at all times on the dial plate the height of the water in the meter, such indicator being actuated by means of a float rising or falling with the water."

Thirdly, relates to overflow valves, whereby any abstraction of gas through that valve is rendered impracticable, and consists of various modifications of "float valves," which rise and admit freely of the passage of any excess of water; but when the water is drawn off the float of suitable form falls on to a valve seating, and prevents the gas following.

Fourthly, consists in the addition to the ordinary syphon of gas meters of a "weighted lever valve," which will stop the flow of gas altogether if the meter should be tilted up ever so little for fraudulent purposes.

Fifth, consists in the addition to the mouth of the inlet pipe of a balanced valve, which, when the "meter is in full operation, the pressure of the gas keeps open, but in the event of any back draught, that draught will suffice to close it."

Sixth, in "enamelling of the interior parts of gas meters, and constructing such parts of the wheel-work and bearings of water meters as are immersed in water, of glass, opal, or artificial stone."

Seventh, relates to a valve for regulating the flow of gas to the burners, and consists of an inverted cone, suspended from one end of a lever, the rising and falling of which closes or opens the aperture for the flow of the gas. The lever is actuated by a float attached at the other end, floating in one end of a syphon containing mercury.

[Printed, 11d.]

A.D. 1849, November 22.—N° 12,858.

GILLARD, JOSEPH PIERRE.—"Improvements in the production of heat and light in general."

These consist in producing "hydrogen gas" by various means, and in its application "to heat and light."

Firstly, through the decomposition of water by "incandescent iron." The apparatus described for this purpose consists of a *retort*, in which are placed a number of small iron pipes "filled

"with pulverized coal, to form voltaic elements." There is an air-tight diaphragm placed near each end of the retort, through which the ends of the small pipes are passed and made secure. A current of "oxide of carbon" is passed into the pipes when heated, and the resulting "carbonic acid" is drawn off at the other end. "Steam" is conducted into the interior of the retort at one end, and "hydrogen gas" drawn off separately from the other. Or iron chains may be substituted for the small iron pipes. The Patentee described several modes of deoxidizing the iron used for the above purposes; firstly, "by means of the waste gas of "furnaces;" secondly, by placing the "incalescent" iron in contact with pulverized "coal, charcoal, coke, pit coals, ligneous substances, some hydrogen, oxide of carbon, oil, or any of the hydro-carburets, even tar or ammoniacal waters;" thirdly, by heating the iron to a white heat. The Patentee recommends that the steam required in gas-making should be distributed over the surface of the coal contained in the retort by means of "one or more pipes pierced with holes," of small diameter. A mode of making gas from "pulverized coal" is shown in the drawings. The pulverized coal being placed in a hopper is screwed forward, and on to a sieve placed in the upper end of the retort, which is perpendicular.

Secondly, in "decomposing water with magnets." "I set all the movements of each magnet on an axis, which set in motion all the bobbins [of induction];" "the magnets decompose the water, and give out pure hydrogen at one hole, and at the other oxigen gas equally pure."

Thirdly, in a "process for rendering hydrogen gas illuminating," "by causing a small jet of lighted gas to pass through a burner (the holes of which are very small) on a very thin platinum sheet, or also on a wick made of platinum wire, having its threads excessively fine and of a graduated section proportionate to the intensity of the pressure of the flame and of the burning hydrogen, a very powerful light is produced."

Fourthly, describes imperfectly a process for "heating melting furnaces for ores, locomotive boilers, and dis-oxidizing iron, and other metals," by applying hydrogen, or the products derived from passing "steam" through "heated coke, charcoal or pit coal, or other ligneous substances."

[Printed, 1s. 1d. See London Journal (*Newton's*), vol. xxvii. (conjoined series), p. 236. Mechanics' Magazine, vol. lii., p. 437. Patent Journal, vol. ix., p. 106.]

A.D. 1849, November 28.—Nº 12,867.

HILLS, FRANK CLARKE.—“An improved mode of compressing
“ peat for making fuel or gas, and of manufacturing gas, and of
“ obtaining certain substances applicable to purifying the same.”

“Firstly, the compressing peat over or between porous or absorbent media, as sand, or gravel, or cocoa-nut, or other suitable vegetable fibre or fabric, in the manner herein-before described.”

“Secondly, the drying and warming the coals (before the gas is distilled off from them) in retorts or ovens made of any suitable material, and heated by the waste heat from the ordinary retort beds.”

“Thirdly, the purifying coal gas from sulphuretted “hydrogen, cyanogen, and more or less perfectly from ammonia, by passing it through the precipitated or hydrated oxides of iron, or the sub-sulphates or oxychlorides of iron, from whatever source obtained, either by themselves, or, which is much better, made into a more porous material by being absorbed into or mixed with sawdust or breeze, or peat charcoal, in coarse powder, or other porous or absorbent material, so as to be readily permeable by the gas, and either used alone or mixed with sulphate of lime or sulphate or muriate of magnesia, potash, or soda, or in conjunction with any other purifying material at present in use for a similar purpose. But the peroxides of iron or manganese made at a red heat, or the oxide of iron mixed with chloride of calcium, or with the muriates and sulphates of manganese, iron, and zinc, and absorbed into sawdust, &c.” are not claimed.

“Fourthly, repeatedly renovating or re-oxidizing the said purifying materials by the action of the air whenever they from time to time cease to absorb sulphuretted hydrogen, so that they may be used over and over again to purify the gas.”

“Fifthly, the collection of the ammonia or ammoniacal compounds given off from any purifying materials containing the said oxides, sub-sulphates, and oxychlorides, while being aired or renovated, either by the use of a condenser of any suitable description, or by combining the said ammonia or ammoniacal compounds with acids or water.”

“Sixthly, the collection of the sulphur, cyanogen, and ammoniacal compounds formed in the purifying materials during the process of purification and renovation.”

“Seventhly, employing the precipitated or hydrated oxides of

“ manganese and zinc, in the same manner as described for the
“ oxides of iron.”

“ Eighthly, supplying the purifying liquid to the scrubbers or
“ purifiers at intervals, by means either of a supply cistern,
“ situated above the purifiers, and having a valve or cock working
“ with an intermitting action, or by means of a forcing pump or
“ syringe, likewise acting at intervals, such elevated cistern or
“ such forcing pump being connected with perforated pipes, roses,
“ or jets placed within the purifier in such manner that the liquid
“ will spread evenly over the surface of the media contained in the
“ purifier.”

“ Ninthly, making the oxides and sub-sulphates of iron from
“ precipitated sulphurets of iron, by mixing such sulphurets
“ with or absorbing them into sawdust or breeze, or other porous
“ material, and then exposing the materials to the air to absorb
“ oxygen.”

[Printed, 1s. See London Journal (*Newton's*), vol. xxxvii. (*conjoined series*),
p. 26. Mechanics' Magazine, vol. lli., p. 439. Patent Journal, vol. ix., p. 139.
Exchequer Reports, vol. ix., p. 256. Law Journal (*Exchequer*), vol. xxiii.,
p. 60.]

A.D. 1849, December 15.—N° 12,890.

LIZARS, CHARLES.—“ Improvements in gas meters.”

These consist, first, in arranging diaphragms in dry meters in
“ conical compartments,” separated from each other; and, secondly, in the “ mode of arranging and working the valves of gas
“ meters.” The top or cover of the valve in which a hollow part
is left, is moved in a suitable manner over the openings in the
lower part of the valve by means of a crank and rod.

[Printed, 9d.]

A.D. 1849, December 21.—N° 12,908.

SPRAY, FREDERICK GEORGE, and NEVETT, GEORGE.—
“ An improved steam engine, parts of the arrangements of which
“ may be applied to apparatus for regulating, measuring, and
“ registering the flow of liquids and gases.”

These relate, first, to improvements “ in the steam engine of the
“ class called rotary ; ” (see Abridgments on the subject of steam
engines).

Second, to an improved “ lubricator,” which is employed in
connexion with the said engine.

Third, to “ a self-acting feed apparatus,” for feeding steam

boilers. Within the feed-pipe is placed another pipe, closed at the top, and fitting so closely as to prevent the escape of steam or water between the two. This pipe is supported on a float on the water, and is raised or lowered according to the level of the water. In the side of this moveable inner pipe is an opening through which, when it coincides with an opening in the outer pipe, communicating with the feed water, the water flows into the boiler; but when through the rising of the float the coincidence of the two openings is destroyed, the supply of water is cut off.

Fourth relates to "an alarm whistle, to be attached to the "boiler."

Fifth, to "a water-gauge and steam indicator." The "water-gauge" consists of a graduated glass tube, and the steam is indicated by means of its pressure acting upon a piston, and compressing a spiral spring. The piston rod being graduated, shows the degree of pressure of the steam underneath the piston.

Sixth relates "to a salinometer or instrument, for ascertaining "the density of the water in the boiler." This is effected by means of a thermometer, which will indicate the temperature of the water or saline solution within.

[Printed, 6d.]

A.D. 1850, February 12.—N^o 12,967.

WEBSTER, JAMES.—"Improvements in the production of "gas for the purposes of light."

The improvement first described, consists in passing steam into the back end of the retort, which is filled with "pieces of iron and black lead in powder." The steam passes through these bodies heated, and enters the retort where the coal is through a perforated partition of sheet metal. The inside of the retort will become "quickly coated with black lead," and the steam will aid in carrying off the gas as quickly as it is evolved. The gas so evolved, is caused to pass through a small empty but heated retort, on its way to the condenser. Secondly, in making gas from "rosin," the steam employed is first passed through a heated retort, "which is charged at its two ends with broken pieces of iron, and between them there is a quantity of black lead powder, mixed with broken pieces of iron," and then into the retorts where the gas is evolved.

[Printed, 9d. See Repertory of Arts, vol. xvi. (*enlarged series*), p. 226. Mechanics' Magazine, vol. liii., p. 139. Patent Journal, vol. ix., p. 238.]

A.D. 1850, February 21.—N^o 12,974.

PALMER, GEORGE HOLWORTHY, and HORTON, JOSHUA.
—Improvements in the arrangement and construction of gas-holders.

These improvements relate to “the mode of supporting the top “of the gasholder,” and consist, first, in the “application of “inner curves or angle irons, forming a double hoop, and also the “use of equilibrium blocks” The form and dimensions of the angle iron and of the “blocks,” are given in the drawings attached to the specification. They are placed round the circumference of the top of the gasholder, and thereby add to its strength and prevent “buckling;” and secondly, in “throwing the whole “weight of the gasholder upon the bottom angle-iron curb, by “which the whole of the downward thrust is converted into a “right-line tug upon the side-plates of the gasholder, by not “rivetting the side-plates to any parts of the vertical ribs, or “angle-iron curb.”

[Printed, 10d. See London Journal (*Newton's*), vol. xxxvii. (*conjoined series*), p. 233. Mechanics' Magazine, vol. liii., p. 159. Patent Journal, vol. ix., p. 261.]

A.D. 1850, February 21.—N^o 12,975.

CORMACK, WILLIAM.—“Improvements in purifying gas, “also applicable in obtaining or separating certain products or “materials from gas-water, and other similar fluids.”

“This invention consists of a mode or modes of applying “certain materials, to purify or free coal-gas from the ammonia “and sulphur, or sulphuretted hydrogen, by which it is usually “contaminated before the purification thereof; and such materials “are applicable in obtaining or separating these products or “materials, not only from gas, but also from gas-water, or other “similar fluids holding hydro-sulphuret of ammonia, or ammonia “and sulphuretted hydrogen in solution. The materials used for “these purposes are two salts of the descriptions following; (that is “to say), the one of such materials is a metallic salt (not a “chloride,) the base of which is capable of being precipitated in “the state of a metallic sulphuret, by the sulphur or sulphuretted “hydrogen contained amongst the impurities of the gas; and the “other of such materials is such a salt, of the description “commonly called muriates, as shall be capable of decomposing

" the ammoniacal salt, resulting from the combination of ammonia with the acid of the other salt, which may be used as one of the materials. The salt which (in consequence of its cheapness) is preferred to be used, as the material for taking up or abstracting the sulphur or sulphuretted hydrogen from the gas or other fluid, is protosulphate of iron, commonly called green sulphate of iron or green copperas; but any other of the soluble metallic salts, which are sufficiently cheap to be used for this purpose, and the gases of which are known to be capable of being precipitated in the state of metallic sulphurets, by the sulphur or sulphuretted hydrogen contained amongst the impurities of gas, may be used in lieu of the protosulphate of iron. The salt which (in consequence of its cheapness) is preferred for use as the material for decomposing the ammoniacal salt, resulting from the combination of ammonia with the acid of the other salt, which may be used as one of the materials, is chloride of sodium, usually called muriate of soda, or common salt; but any other cheap soluble salt may be used, which is of the description commonly called muriates, and which is known to be capable of producing such decomposition as lastly herein-before mentioned." These salts may be applied for the above purposes in any suitable manner.

[Printed, 4d. See Mechanics' Magazine, vol. liii., p. 157. Patent Journal, vol. ix., p. 262.]

A.D. 1850, March 7.—Nº 12,990.

STONES, WILLIAM BENSON.—"Improvements in treating peat and other carbonaceous and ligneous matters, so as to obtain products therefrom."

These improvements consist, first, of "a machine for compressing and partially drying peat." The unpressed peat is put into boxes, and these into frames which are passed through between the bowls of a machine resembling a pair of "squeezers."

Secondly, consists in distilling, at a temperature of, say 700° F., the compressed peat, with or without the addition of tar or fatty matter in retorts, and condensing the vapours in a series of vessels, arranged after the manner of Wolfe's bottles.

Thirdly, the resulting charcoal may be extinguished by passing carbonic acid through it while in an air-tight box or chamber, and it may then be compressed into bricks, and used for locomotives and other purposes.

Fourthly; a new fuel may be obtained by mixing in suitable proportions the above charred peat with anthracite culm, and a small quantity of nitrate of potash or soda. These are wetted, mixed, and pressed.

Fifthly, relates to a means of lighting and reviving domestic fires, and consists in saturating peat with nitrate of potash or soda, "and then with the pyrogenous fatty matter of peat, coal, tar, "resin, &c.

Sixthly, in carbonizing peat in close retorts there is obtained, besides the "gas ammonia," the following substances called "paranaphadipose," "ollose hydro-carbon," "peatole," "adipose matter," "light naptha," &c. By redistilling the "paranaphadipose," other results are obtained, called "peatole," "peupion," "peatine." The residuous matter, on being treated with sulphuric acid, will yield "adiposole," and "peapitch," "adipolein;" also a number of other "products and educts."

Seventhly; the charred peat, by passing vapours of sulphur over it, may be applied in the manufacture of "powder," and of "bisulphuret of carbon."

Eighthly, consists in mixing "atmospheric air" in suitable proportion with "peat gas," (in preference the mixing may take place in the burner adapted to the purpose) and applying the increased "calorific powers," obtained to the heating of platinum to a white heat, for the purposes of giving light.

Ninthly, consists in increasing the illuminating power of peat gas, by causing it to pass through a succession of heated retorts containing "charred peat."

Tenthly, relates to distilling over "bituminiferous carbonaceous hydrous substances or products, &c., from shale, or schistus, "or swine-stone, or asphaltum, or mineral pitch, or cannel coal, or "other bituminiferous coal or substances," by means of "superheated steam," in "lieu of carbonising or distilling by fire." The steam may be superheated by causing it to pass through pipes heated by fire, and the flame and smoke from such fire may be caused "to pass under and up round" the retort or vessel containing the material operated upon, thereby aiding the superheated steam, by heating the outside of the retort. The superheated steam is passed into the retort (which may be made "of iron or copper, &c."), and through the shale or cannel coal, or other like substances broken into small pieces, or pulverized. "Chemical agents," may be added to the material operated upon,

in order "to obtain the products in certain states." An inner vessel called "a pail" is described, for the purpose of introducing the material used, and withdrawing the residuum conveniently; it may be large enough to hold a ton, being one charge of the still.

The vapours of water and other distilled matters so produced, are passed on to a condensing pipe, which is so constructed that it will, in some measure, divide the more easily condensed products from those that are less so, and finally into separate receivers. These receivers are each provided with two taps, the upper one to draw off the "distilled matters," and the lower one to draw off the "condensed water." The "carbonohydrous" products so obtained may be "distilled" and "rectified" by the use of "highly heated steam of water," and sometimes "chemical agents" may be added to the steam, "to produce a composed steam to act with certain results."

Eleventhly, for the purposes of "rectification, separation, purifying, and bleaching, &c., of the various carbonohydrous matters before alluded to, as also oleous fluids, whether animal or vegetable, and fats, tallow, wax, palm-oil, &c." The Patentee makes use of a rotating vessel called a "churn," in which are placed the distilled products and the required chemical agent. This churn may be made of "metals, wood, glass," or of other material, which will withstand the action of the particular chemical agent employed, and its particular use is to agitate and thoroughly mix the ingredients used, in order to ensure their more perfect action one upon the other. This churn may be suitably heated when required.

[Printed, 1s. See Repertory of Arts, vol. xvii. (*enlarged series*), p. 16. Mechanics' Magazine, vol. liii., p. 219. Patent Journal, vol. ix., p. 284.]

A.D. 1850, March 23.—N° 13,015.

CARTER, HORATIO.—"Improvements in the production of light from ordinary coal gas by the use of burners consisting of more than one ring or sheet of flame, combined with a suitable chimney or chimnies supplied with atmospheric air, particularly adapted to ventilation."

These consist, first, in constructing "gas burners with as many flames in the same plane and concentric to each other as its size (consistently with a due supply of air on both sides of each ring of flame) will permit;" "also in receiving this compound flame into a chimney, whose diameter at the mouth shall be

" more or less reduced in proportion to the diameter of the flame
 " [by means of an annular plate of talc with a regulated sized
 " aperture in it, or otherwise], by which the ascending current
 " of air is brought to bear on and compress the flame," and
 thereby produce a bright steady flame; and also "in carrying off
 " the products of combustion from the burner," by means of
 suitable pipes or chimneys; and in "ventilating" apartments by
 means of the waste heat from such burners. The pipes or chim-
 neys may be enclosed in another tube, the air in which becoming
 heated and rarified rises and escapes by a suitable passage.

Second, consists in lighting or illuminating by means of a "gas light" by "surrounding or enveloping" it with a cut glass chandelier.

[Printed, 1s. 3d.]

A.D. 1850, April 23.—N° 13,057.

PAUWELS, ANTOINE, and DUBOCHEZ, VINCENT.—"Im-
 " provements in the production of coke, and of gas for illumination,
 " and also in regulating the circulation of such gas."

These consist, first, in a combination of a retort made of bricks and metal, and furnaces, flues, and pipes, for the production of gas and coke. The desired object of this arrangement being to provide suitable flues, whereby the retort may be more or less heated as required, and suitable pipes and valves by which the generated gases may be drawn off, and directed towards the purifiers, or into the flues, to be burned as required.

Secondly, relates to the application and use of an "extractor" for drawing the gas from the above retort, and consists in pumping the gas by means of the elevating and depressing of metals, formed after the manner of gasometers, which may be actuated by suitable shafts and cranks.

Thirdly, relates to the continued and extra heating of the retort for the purpose of condensing and rendering hard the coke contained therein by means of the combustion in the flues of the gas itself. The retort and adjoining brickwork being thus heated to a high degree becomes a magazine of heat to start the succeeding charge with.

Fourthly, consists in the application of a "moderator." The pressure and flow of gas may be adjusted by causing the gas to flow through the upper part of a closed chamber, called the

“tank,” in which is floated a counterpoised “bell-chamber,” resembling a gas holder, the interior of which is made to communicate with the air by means of a pipe proceeding from the bottom of the tank, and reaching above the level of the water. If the pressure of the gas in the main becomes too great it will act on the bell-chamber by depressing it, and as the top of this chamber is in connexion with a valve on the ingress pipe, by means of chains, levers, and rods, it will be more or less closed, by which means the desired equilibrium will be restored. Such an apparatus may be variously modified, as will be seen by referring to the drawings.

[Printed, 3s. 5d. See London Journal (*Newton's*), vol. xl. (*conjoined series*), p. 43. Mechanics' Magazine, vol. liii., p. 537. Patent Journal, vol. x., p. 41.]

A.D. 1850, April 23.—N^o 13,059.

LAMING, RICHARD, EVANS, FREDERICK JOHN.—“Improvements in the manufacture of gas for illumination and other purposes to which coal gas is applicable; in preparing materials to be employed in such manufacture, and in apparatus for manufacturing and using gas; also improvements in treating certain products resulting from the distillation of coal; parts of which above-mentioned improvements are applicable to other similar purposes.”

This invention consists, first, in “the introduction of asbestos or fibrous silicate of magnesia among the materials used for making articles of clay intended to be submitted to a great heat, and the use of all such articles made with asbestos, or fibrous silicate of magnesia, in their composition.”

Secondly, “in the combination and arrangement of apparatus, [in the making of gas from oil, tar, &c. and water], particularly of the large funnel marked D, D, with the double chambers and back and front manhole doors, by bringing it in a fluid state into contact with red-hot coke, or other suitable material.”

Thirdly, in “the elongation of the eduction pipes of retorts used for making gas for illumination along or near their axes.”

Fourthly, in “the use of coal or peat gas, mixed or not with air, for heating platinum wire or foil to whiteness, and thereby producing light.”

Fifthly, in “the combination of processes for making a purifying material containing chloride of calcium and precipitated oxide of iron or copper.”

Sixthly, in "the purification of coal gas by the use of sulphate
" of lime mixed with any of the metallic salts above named, and
" the use of the spent purifying material as a manure."

Seventhly, in "the purification of coal gas by mixtures, made
" as described, whether with hydrated or precipitated oxide of
" iron or of copper."

Eighthly, in "the extraction of ammonia and carbonic acid
" from coal gas by chloride of magnesium or sulphate of mag-
" nesia and water, diffused through sawdust, or other solid matter,
" capable of exposing an extensive surface of the re-agents to the
" gas without materially impeding its passage."

Ninthly, in "the purifying coal gas by the repeated use of a
" solid material containing sulphate of magnesia or chloride of
" magnesium or calcium, or more than one of those re-agents in
" combination with oxide of copper, and mixed or not with lime
" or magnesia, or both or either, or both of the carbonates of
" those earths."

Tenthly, in "the use of the spent materials above described for
" converting solutions of carbonate of ammonia, mixed or not
" with hydrosulphate of ammonia, into solutions of ammoniacal
" sulphate, by which use we also change the sulphate of lime or
" sulphate of magnesia in the said mixtures into carbonate of
" lime or carbonate of magnesia."

Eleventhly, in "checking the rapidity of the regenerating
" action, and, consequently, preventing the temperature of the
" materials [used in purifying gas] from rising to a pernicious
" height, namely, by wetting them with water, or by condensing
" steam in their mass, either in or out of the purifier, at any time
" after they commence to purify the gas, and before they be put
" in communication with the atmosphere."

Twelfthly, in "the use of air artificially warmed, for promoting
" in cold weather the regeneration of hydrated oxide of iron in
" mixtures, which have been used for purifying coal gas from
" sulphuretted hydrogen."

Thirteenthly, in "the use of a solution of phosphate of lime in
" hydrochloric acid, for purifying coal gas and for saturating
" ammoniacal solutions; and we claim also the use of the products
" as manures."

Fourteenthly, in "making chloride of calcium, by causing the
" hydrochloric acid gas, which results from the decomposition
" of common salt by sulphuric acid, to act on lime or carbonate

" of lime on its passage from the furnace, when the decomposition
 " is effected. And also the collecting of concentrated hydrochloric
 " acid for making chloride of calcium or other purposes, by con-
 " densing hydrochloric acid gas in water by means of earthen
 " vessels built into a conduit or flue, conducting from furnaces in
 " which chloride of sodium is decomposed by sulphuric acid, and
 " containing water kept at about 212 degrees Fahrenheit by the
 " heated products of the said furnaces."

Fifteenthly, in "the means we have described for making coke
 " and charcoal repeatedly useful for purifying coal gas, and for
 " obtaining its ammonia by their agency."

Sixteenthly, in "the manufacture of the prussiates of potash,
 " soda, and ammonia; by decomposing solutions of the sulphates
 " or carbonates of those bases by solutions of prussiate of lime."

Seventeenthly, in "making carbonic acid gas for converting
 " hydro-sulphate of ammonia into carbonate of ammonia, and for
 " all other purposes in the arts, by exposing a proper mixture of
 " deutoxide of copper and carbon in powder to a red heat in
 " suitable vessels."

Eighteenthly, in "the separation of the grosser from the finer
 " parts of peat, and the consolidation of the latter by the process
 " above described."

[Printed, 9d. See London Journal (*Newton's*), vol. xxxvii. (*conjoined series*),
 p. 328. Mechanics' Magazine, vol. liii., p. 339; and vol. lvi., p. 475. Practical Mechanics' Journal, vol. v., p. 95. Patent Journal, vol. x., p. 105.]

A.D. 1850, April 30.—Nº 13,066.

MICHELS, GEORGE.—"Improvements in treating coal, and in
 " the manufacture of gas, and also in apparatus for burning gas."

These improvements consist, first, in making an intimate mixture in suitable proportions of anthracite coal and bituminous coal in powder, with the required quantity of water. This mixture is heated in a suitable retort, first, to a temperature of "903° F.," and afterwards to a "clear red heat." Towards the end of the process air is admitted, and the hydrocarburets are conducted into the furnace and burned, which further heats the retort. The products from the distillation are "coke, ammoniacal liquors, and liquid hydro-carburets, the two latter in the condenser." "Bituminous coal" alone may be treated in a similar manner, and the resulting products will be the same. The coal used for the above purpose should be freed as much as possible from schistus, pyrites, &c., by *means of a blast of air on the powdered coal, or by washing it.*

Secondly, consists "in treating the coal of tertiary formation, " for instance, Bovey coal, Kimmeridge coal, and Brora coal," with the view to "obtain dry coal, which is a good fuel, and also " liquid hydro-carburets," and also " ammoniacal liquids when " the coal contains nitrogen." The coal is placed on the shelves of a waggon on wheels, which is run in to a large " metal case." The metal case is then closed and heated by fire sufficiently high that the steam to be next introduced will not condense. Steam is then heated to a temperature of "about 700° F.," and passed into the vessel in such a manner that it will act upon the coal in all directions. By this means the coal will be dried, and the different azoted matters, and the hydro-carburets carried into the condensers. A tube may be placed at the lower part of the "case," to prevent the escape of "liquid products not volatilized."

Thirdly, relates "to the manner of treating the ammoniacal " liquids," and consists in "methodically washing" or agitating the "ammoniacal liquors" with a mixture of "oxide and sulphate " of lead," reduced to the size of coarse sand. The oxide and sulphate of lead is obtained by roasting (galena) sulphuret of lead in a reverberatory furnace. The resulting liquor is sulphate of ammonia, and may be suitably evaporated and crystallized. The lead so used may be revived and used again by being again roasted.

Fourthly, describes the mode of treating the hydro-carburets. The Patentee states that these "hydro-carburets" have the property of becoming lighter by each succeeding distillation and condensation. For instance, some oils when first distilled will have a specific gravity greater than that of water, and a boiling point equal to 230° F., which may be reduced by the above means, the sp. gr. to 0·911 or still lower, and the boiling point to 140° F. For this purpose the "case" already referred to is used as the distilling retort. The oils are caused to flow into the heated retort through small holes in the conducting pipe, and steam superheated is passed through it. The superheated steam acting on the vapour of the oils causes first the deposition of "carbon" in the "case" and then carries over with it the resulting vapour into the condensers. Here it may be collected and drawn off, the heavy oils from the lower part of the condenser, and the lighter oils from the top, and they may be returned again and again to the still till they become of the desired specific gravity. The lightest oils above referred to will now volatilize and leave no residue. Such oils are

applicable for many purposes of the "trade," and useful for turning into gas.

Fifthly, relates to producing gas from tar, and in the addition of supplementary heated tubes, through which the bituminous vapours can be passed when desired to convert them into permanent gas.

Sixthly, consists in purifying gas by passing it through a "mixture of oxide and sulphate of lead," and in reviving the lead and recovering the sulphate of ammonia as already described.

Seventhly, consists in heating the liquid hydro-carburets in such an apparatus as is now in use for making gas from camphine, &c. to a temperature of about 900° F., and thereby producing permanent gas.

Eighthly, consist of a circular burner, the inner circle of which may be screwed up and down, whereby the slit for the emission of the gas may be enlarged or diminished according to the degree of richness of the gas.

Ninthly, relates to an "improved gas stove." The previous burner is employed, and is placed at the bottom of a cylinder, and supplied with a regulated amount of air through a slide valve in the door. The hot burned air ascends the pipe into a chamber, then descends numerous smaller pipes placed round it, into another chamber, and finally escapes to the chimney by a pipe. This apparatus is enclosed in a brick or metal casing, into which is admitted a current of air, which becomes heated and ascends and escapes into the apartment by suitable openings at the top.

Tenthly, relates to a mode of equalizing the pressure of gas in the consuming pipes. A counterpoised floating vessel, resembling a small gas holder, being in communication with the valve of the ingress pipe by means of levers and rods, causes it to open and shut according as it (the small gas holder) is depressed or elevated by the pressure of gas in the main.

[Printed, 4s. 7d. See Mechanics' Magazine, vol. liii., p. 358. Patent Journal, vol. I., p. 57.]

A.D. 1850, June 12.—N^o 13,128.

NEWTON, ALFRED VINCENT.—"Improvements in the production of gases to be used for lighting, heating, and motive power purposes," "being a communication from a foreigner."

These improvements relate mainly to "a magneto-electrical

" apparatus for decomposing water or other fluids, in order that " the gases evolved therefrom may be applied to various useful " purposes ;" and consists, first, " in the use of helices, furnished " with hollow helical coils or tubes, to be filled at pleasure with " water or other electrical absorbent.

Secondly, " in the construction and use of electrodes." Thirdly, " in applying electricity to the decomposition of fluids by pulsations or intermittent discharges."

Fourthly, " in the construction and use of a governor for regulating the electric currents."

Fifthly, " in catalyzing or rendering hydrogen gas luminiferous by passing it through spirits of turpentine or other hydro-carbon at common temperatures."

Sixthly, " in the use of non-conducting pipes and insulated gasometers for conveying and receiving the gases for the purposes of this invention."—(See Abridgments on Electricity and Galvanism.)

[Printed, 2s. 3d. See London Journal (*Newton's*), vol. xxxviii. (*conjoined series*), p. 240. Mechanics' Magazine, vol. liv., p. 181. Patent Journal, vol. x., pp. 257 and 269.]

A.D. 1850, August 22.—N^o 13,230.

DICK, WILLIAM.—" Improvements in the manufacture of steel and gas."

" These improvements consist in the making of steel and gas in the same retort at one and the same time. I employ the fire-clay gas retort now in common use; when it is heated to the usual temperature required for the production of gas, I introduce the iron intended to be cemented, preferring to act on bars of a length equal to that of the retort; and these bars are disposed horizontally on the lower of the retort, a thin layer of coke intervening between them and the retort. The retort is then charged in the usual way as for making gas, and the usual process of gas making continued, the retort being charged with fresh supplies of coal, or other materials capable of making gas, at the usual intervals, and in the usual manner; the bars of iron remaining in the retort for a longer or shorter period, according to their size or thickness, and being turned over at intervals of two or three days, at the time when the retort is being charged with fresh supplies of coal or other materials capable of making gas, and allowed to remain in the retort till the process of

" cementation be completed ; the process of cementation being
 " tested in the usual way, by withdrawing one of the bars, sud-
 " denly cooling and breaking it, and the process of cementation
 " to be continued until the disappearance of the pith in the centre
 " indicates the completion of the process of cementation, when it
 " will be found that steel has been produced."

[Printed, 3d. See *Repertory of Arts*, vol. xvii. (*enlarged series*), p. 163.
London Journal (Newton's), vol. xxxviii. (*conjoined series*), p. 247.
Mechanics' Magazine, vol. liv., p. 177. *Patent Journal*, vol. x., p. 261.]

A.D. 1850, September 5.—Nº 13,251.

RENNIE, JAMES.—" Improvements in the construction of gas
 " retorts and furnace, and in apparatus or machinery applicable to
 " the same."

This "invention consists, firstly, in constructing gas retorts,
 " furnaces, and apparatus applicable to the same, in such manner
 " that the closing or opening of the furnace door shall cause the
 " retort or retorts in the furnace to turn, or in such manner that
 " the motion of the furnace door upon its hinges shall be con-
 " nected with the motion of an apparatus for turning the retort or
 " retorts, in order to expose fresh surfaces of the coal to the more
 " immediate action of the fire while the furnace is in full work,
 " and without requiring any increase of the attention of the work-
 " men beyond that necessary to the firing of the furnace, whereby
 " also the wear and tear of the retorts will become more uniform
 " than when fixed." The furnace door may be opened by a lever
 and rod; at the end of the lever is placed a pall, which works
 into a toothed wheel on the end of the retort. Several retorts
 may be geared into each other.

" Secondly, in constructing (the brickwork of) furnaces for gas
 " retorts, with a lining of ashes, or some other bad conductor of
 " heat, in order to prevent the loss of heat or rending of the walls
 " by the expansion of the furnace."

[Printed, 11d. See *Mechanics' Magazine*, vol. liv., p. 217. *Patent Journal*,
 vol. x., p. 272.]

A.D. 1850, October 17.—Nº 13,292.

YOUNG, JAMES.—" Improvements in the treatment of certain
 " luminous mineral substances, and in obtaining products
 " therefrom."

These improvements consist in "the obtaining of paraffine oil, " or an oil containing paraffine, and paraffine, from bituminous " coals," by treating them in manner as follows :—The coals (the coals usually called parrot coal, cannel coal, and gas coal, are used in preference) are to be broken into small pieces of about the size of a hen's egg, or less, and put into a common gas retort, to which is attached a worm pipe passing through a refrigerator, kept by means of a stream of cold water at a temperature of about 55° of Fahrenheit's thermometer. The retort being closed is then to be gradually heated up to a low red heat (but not higher), at which temperature it is to be kept until volatile products cease to come off. The crude paraffine oil distilled or driven off from the coal as a vapour will be condensed into a liquid in passing through the cold worm pipe; or some of the oil may be run off from the retort itself through an opening and pipe. The oil so produced will sometimes upon cooling to 40° F. deposit paraffine.

The crude oil so obtained may be purified by first heating it, by means of a steam pipe, or other means, to about 150° F., when water and undissolved impurities contained in the oil will separate more readily from it. The clear oil should then be distilled and condensed by means of a refrigeratory apparatus. The oil so obtained is then agitated with "oil of vitriol of commerce," and allowed to settle; the supernatant oil is drawn off and agitated with caustic soda of a specific gravity of 1.300. When this has subsided, the supernatant oil is again drawn off and again distilled. From this product a fluid more volatile than paraffine may be obtained by adding water and redistilling; the clear and transparent fluid thus obtained may be burnt for the purpose of illumination, or applied to any other purpose to which it may be applicable. The oil left in the still is to be carefully separated from the water, and again stirred with oil of vitriol and allowed to settle; the supernatant oil is then drawn off, agitated with chalk ground up with water. This oil, on being kept, say at a temperature of 100° F., for a week, will deposit its impurities and become fit to be used for lubricating purposes, either by itself or mixed with an animal or vegetable oil, or it may be used for the purposes of illumination.

Paraffine may be extracted from the purified paraffine oil by cooling it, say to 30° or 40° F., when it will crystallize and can be separated by filtration, and afterwards by squeezing it in a

powerful press. In this state of purity it may be employed for lubricating and other purposes. The paraffine may be further purified "by treating it several times at a temperature of about 160° F. alternately with its own bulk of oil of vitriol and with a similar quantity of caustic soda (of the strength already given) until the paraffine ceases to render the oil of vitriol black. It is then to be washed in a weak solution of soda, and, lastly, with boiling water." Paraffine may be obtained in greater quantity from oil which has had one half of its quantity distilled off.

[Printed, 3*d.* See *Repertory of Arts*, vol. xix. (*enlarged series*), p. 37. *Mechanics' Magazine*, vol. liv., p. 334. *Patent Journal*, vol. ii., p. 37. *Law Journal (Chancery)*, vol. xxiii., p. 190. *Jurist*, vol. xvii., p. 277.]

A.D. 1850, November 9.—N^o 13,332.

VIDIE, LUCIEN.—"Improvements in measuring the pressure of air, steam, gas, and liquids."

"These consist, first, "in introducing in pneumatic instruments a second hand, which, for instance, in performing one hundred revolutions, will exhibit the hundredth, whilst the former would only make one turn and indicate the unit." This is effected by a suitable combination of wheels. One hand is also caused to mark on a "spiral," whereby it may make several revolutions. The hand is moveable in a slide through its centre, and is actuated by a small rod working "in a groove cut spiral on the dial."

"Secondly, "in arrangements in pneumatic instruments for setting the indicating hand at its proper point of division, and for adjusting the same."

"Thirdly, in arrangements of jointed organs of pneumatic instruments."

"Fourthly, in arrangements for lengthening or shortening the arm of the lever in pneumatic instruments provided with an indicating hand."

"Fifthly, in the arrangement for regulating the action of pneumatic instruments, and also for varying the length of their course."—(See Specification.)

[Printed, 6*d.*]

A.D. 1850, November 12.—N^o 13,334.

BOOTH, GEORGE ROBINS.—"Improvements in the manufacture of gas."

These relate to the "construction of an apparatus used in " making gas from oleaginous, fatty, resinous, tarry, or spirituous " substances, and in the mode of working the apparatus," to be applied chiefly to "premises in isolated situations," and consists in a compact arrangement of the required parts. The retort is caused to be suspended by the neck, and is made of corrugated iron in preference, over which the oil is projected. Over the retort are placed globes for the gas to expand in. The Patentee claims the passing of the gas through coke, pumice stone, or any other porous substance, immediately on its passing from the retort, instead of previously passing it through purifiers. That portion of oil which condenses in the cistern may be run back into the retort, and redistilled, and doing so will cause the precipitated carbon to be "dissipated and made into a gaseous form." The deposited "soot or carbon" may be further removed from the retort and pipes by admitting air and producing a draft while they are hot, and thereby burning them.

[Printed, 6d. See *Repertory of Arts*, vol. xviii. (*enlarged series*), p. 290.
Mechanics' Magazine, vol. liv., p. 413. *Patent Journal*, vol. xi., p. 217.]

A.D. 1850, November 12.—N^o 13,335.

SPENCE, PETER. — "Improvements in the manufacture of " alum and certain alkaline salts, and in the manufacture of " cement; part of which improvements are applicable in obtaining " volatile liquids."

This invention relates, first, to the manufacture of alum from "schale;" second, to saturating the "mother liquors" from the alum manufacture by means of "ammonia;" third, to the making of cement by adding "sulphate of zinc" to "spent schale," or to "spent lime" from the "dry lime purifiers;" fourth, to producing "carbonate of soda from sulphate of soda, and carbonate of potash " from sulphate of potash," by means of baryta or strontia. Lastly, consists of an apparatus to be used for the distillation of gas "ammoniacal liquor," and which may be applied to other distilling purposes. A series of boilers are employed, each being placed slightly lower than the preceding one, so that the liquor supplied to the highest may be ran from the first into the second, and so on to the lowest. High pressure steam, in preference, is introduced into the lowest boiler, and proceeds from that into the next through suitable piping, and so on to the highest, carrying with it from one to the other the evaporated ammonia. In the

highest the ammonia becomes concentrated and the vapours may be conducted off by a pipe, to be passed through the mother liquors in the alum process, or be otherwise used. The liquor by this means becomes spent in the lowest boiler and may be discharged, and the process may be made continuous.

[Printed, 8d. See *Repertory of Arts*, vol. xviii. (*enlarged series*), p. 24. *Mechanics' Magazine*, vol. liv., p. 412. *Patent Journal*, vol. xi., p. 84.]

A.D. 1850, November 12.—Nº 13,337.

MEDHURST, HENRY.—“Improvements in gas meters.”

These consist, first, “in the use and application to dry gas meters of conical seat valves, with one or more passages to admit and discharge the gas to and from the different compartments of gas meters.” These valves are caused to have “a rotary or partially rotative motion in their seats” [by means of levers at right angles with each other, with connecting rods acting on a crank]; and they are so arranged that “the valves themselves (excepting their faces) and the whole of the machinery for working them, is not in contact with the gas,” by which corrosion is avoided and ready access to the parts ensured. This may be effected by passing the vertical and vibrating shafts of the diaphragms through stuffing boxes into a separate compartment.

Second, consists “in the introduction to wet gas meters of a cylindrical vessel to receive the float, the vessel having a small perforation near the bottom, the use of which is, that upon any sudden increase of pressure the valve attached to the float by the wire will not suddenly descend and close as in ordinary meters, causing a vibration in the light, or altogether closing the valve, thereby shutting the gas entirely off.”

[Printed, 1s. 3d.]

A.D. 1851, January 2.—Nº 13,436.

HORTON, JOSHUA.—“Improvements in the construction of gasholders.”

These improvements relate, “firstly, to a novel construction and arrangement of guides of telescopic gasholders, whereby the moveable parts of such gasholders are or may be guided into a vertical direction, as the volume of gas in the gasholders increases or diminishes, and it becomes necessary to increase or diminish the capacity of the gasholder.”

"A series of vertical guides attached to posts or columns are set round the tank of the gasholder in the usual manner, except that my columns are not so high as the ordinary ones. These posts or columns may be braced together at the top with circumferential tie rods; and friction bowls on rollers are adapted to different suitable parts of the gasholder and its attachments, and are arranged so that they, or some of them, may work vertically against the vertical guides attached to the posts or columns which are set round the tank, while other antifriction guides or rollers are made to work against bars, plates, or rails, adapted to the other parts of the gasholder or of the tank, so as to keep the parts separate and in a vertical position, and also prevent them from jamming or sticking while moving up or down."

"The second improvement consists in adapting to the outer or inner sides of gasholders vertical fixed bars or rails, which will present an even surface suitable for receiving the pressure of the antifriction guide rollers of the respective parts of the gasholder, whereby the inconvenience arising from the use of loose bars will be prevented."

"The third improvement consists in forming the top and bottom of the water cup or hydraulic joint of gasholders of sheet or plate iron, wrought to the shape required for such parts, instead of using angle iron and sheet iron bolted or riveted together."

[Printed, 1s. 7d. See London Journal (*Newton's*), vol. xxxix. (*conjoined series*), p. 331. Mechanics' Magazine, vol. lv., p. 38. Patent Journal, vol. ii., p. 186.]

A.D. 1851, January 14.—N^o 13,468.

MEAD, CHARLES ROPER.—"Improvements in apparatus for measuring gas, water, and other fluids."

These relate, first, to "an arrangement or construction of the parts of a wet gas meter, whereby gas may be measured with one gas vessel" [divided into two compartments], and consists in the "supporting or counterbalancing the tumbling lever by a mechanical arrangement, which assists in lifting it to a vertical position, whereby the resistance offered to the gas in working the meter is greatly reduced."

Second, consists of a modification of the above, the principal difference being that two vibrating measuring vessels, each divided into two compartments as before, are employed instead of one.

Third, relates to "an improved counter or index," and consists of a row of drums or wheels, with figures arranged in a suitable manner on their periphery. The drums are placed side by side on an axis, and each drum, by means of a ratchet wheel and catch, becomes in succession the driver for the next or adjoining wheel; and when the drum to the right has made ten revolutions, the second will have made one, and the third one-tenth of a revolution.

Fourth, relates to "a meter for measuring water or other liquids," and consists of a vessel, which may vibrate or fall a regulated distance freely from one side to the other, divided into two compartments by a partition. The vessel being tilted to one side, the water is admitted to flow into the elevated compartment, till it becomes so top heavy "as to overbalance or tip over that end, when the relative positions of the two ends will be changed, the water or fluid being discharged, and the opposite end (or compartment) of the measuring vessel brought into a position to receive the entering fluid." "The quantity of fluid discharged at each vibration of the measuring vessel is regulated by small stops, which determine the angle at which it shall stand, and the contents, previous to tipping over. Greater accuracy in the 'tipping over' is ensured by attaching to each 'measuring vessel' a small 'bucket,' so placed 'that the last portion of the fluid that flows into each vessel runs into them, by which its weight is brought to bear with the greatest effect.'"

[Printed, 1s. 6d.]

A.D. 1851, February 24.—N^o 13,530.

DIRCKS, HENRY.—"Improvements in the manufacture of gas, in gas burners, and in apparatus for heating by gas."

These improvements consist, first, in passing the gas from the retort through the tarry contents of a boiler, which is heated, and from thence into another retort or retorts, surrounded by a furnace, which keeps them at a high temperature; these retorts being filled with common coke, or boghead cannel coke, or broken tiles or brick, or other suitable incandescent matter. From these retorts the gas proceeds to the condensers. Secondly, in order to reduce the quantity of tar produced, to introduce along with the coal, common coke, boghead cannel coke, lime, sawdust, peat, tanners' bark, any vegetable charcoal, or such matters." "In making gas from coal, coke, tar, rosin, oil, and fatty matters,

" they are allowed to drop on boghead cannel coal coke heated." The rapid charging of the retorts may be effected by a suspension railway carrying a travelling crane, which sustains a wrought-iron shoot.

Secondly, consists of several kinds of "burners," whereby the exit of the gas can be regulated by screws, or otherwise, and by which the gas may be heated before it arrives at the burner.

Thirdly, the Patentee employs coal gas burning "en masse," mixed with air, to heat stoves or boilers.

[Printed, 1s. 6d. See *Repertory of Arts*, vol. xviii. (*enlarged series*), p. 344. *Mechanics' Magazine*, vol. lv. p. 178. *Patent Journal*, vol. xi., p. 268.]

A.D. 1851, April 15.—Nº 13,590.

STONES, WILLIAM BENSON.—"Improvements in the use "and treatment of peat and its products, and other carbonaceous "matters, and also for apparatus applicable to such and other "chemical purposes."

These improvements relate, first, "to a mode of charring or "distilling peat or wood, or tanners' bark and coal together, "whether for the sole purpose of making a peculiar sort of coke, "or for the two-fold purpose of producing gas and making coke "at the same time."

Well "dried peat," &c., in a powdered state, is intimately mixed with the "dust of caking coal," in about equal proportions, and put into a retort so as to fill the retort. On heating the retort, the peat has a tendency to contract while the coal expands, the effect of which is to produce a more compact and dense material when charred, than could be obtained from peat alone. To obtain a still more condensed texture of this compound coke, an iron plate, made to fit the interior of the retort transversely, may be screwed up, so as to compress it mechanically. The gas or vapour produced may be passed through retorts of incandescent charred peat, for the double purpose of completing the distillation of the gaseous products, and of forcing the gas to take up more carbon.

Secondly, relates to applications of "the greases obtained from "peat by distillation."

Thirdly, relates to "making manures," manuring seeds by coating them with various manures, &c.

Fourthly, relates to a "mixing and digesting churn."

[Printed, 9d. See *Repertory of Arts*, vol. xix. (*enlarged series*), p. 220. *Mechanics' Magazine*, vol. lv., p. 338. *Patent Journal*, vol. xii., p. 22.]

A.D. 1851, April 15.—N^o 13,593.

BARLOW, THOMAS GREAVES, and GORE, SAMUEL.—“Improvements in the treatment of substances used in the production of gas, for giving light and heat, and of some of the products of the said substances; as also in the apparatus employed in the manufacture of such gas, and in discharging and giving motion to gas.”

Consisting, firstly, in an arrangement of retorts, for the purpose of decomposing “steam” [or water], coke, and coal, and thereby making gas for giving light or otherwise. The retort may be of any suitable form, and with the required divisions; or there may be two or three retorts working together, suitably placed, and connected one to the other by pipes provided with valves. If three retorts be used, then one “three-way cock” may be employed instead of three separate valves. Such retort or retorts must be so arranged, that steam heated to a high degree, if desired, can be passed, first over incandescent coke, and then over the coal which is being converted into gas. In preference, the gas evolved from the steam and coke should be passed through a suitable condenser, to withdraw the excess of steam, previous to its entering the retort containing the coal; it may also be caused to pass through “lime, carbonate of soda, or protoborate of soda,” to remove the “carbonic acid.” The patentee prefers to work three retorts in a set, one of which being emptied of its coke, and again charged with coal, is put in communication with the second retort, still containing its coke, into which latter retort the steam is caused to enter, and pass from thence through the condenser and into the fresh coal retort. When the charge is exhausted, the course of the steam is reversed, and now passes through the first, and on to the third retort, now charged with coal. “Tar, melted resin, resin oil, oils, fatty liquids,” or “hydrocarbons,” may be injected, by clockwork or otherwise, into a retort containing incandescent coke, through which the gas evolved from the coke and steam may be passed, in a similar manner to that described in the case of coal.

Secondly, the ashes from such “matters,” or from “boghead cannel coal,” may be treated with sulphuric acid, and made into sulphate of alumina and alum; the solid residue will consist of pure and fine silica suitable for various purposes. The residue of the retort, if still containing carbonaceous matter, will, after being treated with dilute sulphuric acid, yield a “decolorant” substance similar to animal charcoal.

Thirdly, "in a reciprocating rotary pump or exhauster, with a regulator in connection with it, for discharging and giving motion to gas," in which the valves are connected and balanced by "a connecting rod, with or without a weight and set screw in all the different arrangements of such apparatus, when used with one or more shafts."

Fourthly, consists in placing a "regulator" or "adjuster" to a gas exhauster, upon "any part of the pipe between the retorts and the junction of the 'by-pass' pipe with the inlet pipe of the exhauster, or in any other position between the exhauster and the retorts, except on the 'by-pass' pipe, or passing the gas through a regulator or adjuster, or causing a regulator or adjuster to act on the gas, in any part of its passage from the retorts to the gas holder, before it reaches the junction of the by-pass pipe with the inlet pipe."

[Printed, 1s. 9d. See Mechanics' Magazine, vol. lv., p. 352. Patent Journal, vol. xii., pp. 73 and 96.]

A.D. 1851, April 24.—Nº 13,599.

SMITH, WILLIAM, and PHILLIPS, THOMAS.—"Improvements in apparatus for heating, ventilating, and cooking by gas."

These improvements refer, first, to a stove of any desired pattern, within which are placed two cylindrical chambers, one within the other. These chambers may be closed at the bottoms, but are freely supplied with cold air through suitable openings. Underneath these is another chamber in which the gas is burned, the burned air and draft from which rises between the two cylindrical chambers, heating the air therein, and escape to the chimney by suitable openings. The heated air flows upwards and escapes into the chamber to be heated. The gas-burner is made to swivel, so that it can be drawn out of the stove when required to be lighted.

Secondly, relates to heating "baths" by means of gas, and consists in burning the gas underneath a circular boiler in such a manner that the draft passes up within the inner circle of the boiler, and among tubes, and is led off by a pipe into a cavity which surrounds the bottom and sides of the bath. A pipe placed at the lower part of the bath brings the cold water into the boiler, and another pipe placed higher conducts the heated water back again into the bath.

Thirdly, consists in the application of gas "to an apparatus or fire pot for heating tools used in certain manufactures or trades,

" for example, soldering irons, plumbers' irons, book-binders' rollers, &c."

Fourthly, consists in ventilating dwelling houses, &c. by gas. The draft from the gas stove, placed in an under chamber, is carried up in a shaft to the chimney top; between each ceiling and floor a tube is inserted, one end of which opens into the shaft, and the other into the room. A ventilating current is thereby established.

Fifthly, relates "to an apparatus for cooking by gas," "the chief novelty of which is the combination of parts in such a manner as to constitute a perfect kitchen in one apparatus." The burners used "are (in preference) drilled or perforated on the underneath surface or surfaces" of the tubes, instead of being drilled on the top or sides.

[Printed, 1s. 1d.]

A.D. 1851, May 10.—N° 13,626.

HALLEN, HARDING.—"Improvements in gas burners." This "invention consists" in "combining together pot or fire clay," or other clay composed of any mixture of potters' materials, with metal, in the construction of gas burners, the external portion of the burner being of metal, and that portion of the burner in which the holes are pierced being made of clay, which is much better calculated to resist the action of the flame or the corrosive action of the products of combustion, which speedily destroy gas burners made entirely of metal.

[Printed, 5d.]

A.D. 1851, May 27.—N° 13,642.

NEWTON, ALFRED VINCENT.—"Improvements in the carbonization of coal, and in the utilization of the products disengaged during that operation, in improving the quality of the products intended for illuminating purposes, and in regulating the flow of the same" (being a communication from abroad).

The first object of this invention is to extract "gas" from coal, and at the same operation to produce an improved quality of "coke." For this purpose the retort is placed in such a curved and slanting position that when the lower mouth of the retort is opened at the termination of a charge, the hot coke will slide down into a "cooling chamber" placed lower, also in a slanting position.

The charge of coal may be renewed at the upper end of the retort, where a tilt waggon and rails are provided for the purpose.

Secondly, relates to a "regulator to be applied to service mains " or pipes running under ground." This apparatus is for equalizing the pressure of gas in the "mains," and consists in causing the gas to flow into and out of a closed vessel, in which is placed a floating and counterpoised "bell," resembling a small gas holder. When the pressure of gas increases, this bell is depressed in the water in which it floats, and being connected by means of rods and levers with a throttle valve in the inlet pipe, shuts off the gas more or less, as required, to restore the proper pressure. An adjustable weight is attached to the lever, whereby the pressure in the mains may be increased or diminished as required. An air pipe is introduced into the interior of the bell to allow of the exit and entrance of the air required for its proper action.

[Printed, 2s. 3d. See London Journal (*Newton's*), vol. xli. (*conjoined series*), p. 17. Mechanics' Magazine, vol. lv., p. 455. Artizan, vol. x., p. 8. Patent Journal, vol. xii., p. 112.]

A.D. 1851, May 29.—N^o 13,645.

ADAMS, HENRY W.—"An improved means of generating galvanic electricity; of decomposing water or various electrolytes; of collecting hydrogen; of burning it or atmospheric air separately or in combination."

These improvements consist, first, in generating galvanic electricity, and producing hydrogen gas by means of the patentee's improved galvanic battery. (See Abridgments of this subject.)

Secondly, relates to charging a heated "retort with zinc, or any of the ores of zinc," and passing through it a stream of steam, or steam mixed with free hydrogen, carbonic oxide, and carbonic acid, whereby free hydrogen and oxide of zinc will be produced.

Thirdly, in "increasing the heating power of hydrogen or other gas," which may be effected by passing the gas under pressure through "charcoal or charred matter."

Fourthly, in "impregnating atmospheric air or gas of any kind with the vapour of any volatile hydro-carbon, as alliole, benzole, pyroxylic spirit, acetone, or other analogous burning fluids," by means of passing the air or gas over such substances contained in trays, and through layers of spongy material impregnated with the substance, all being enclosed in a vessel provided with an inlet and outlet pipe.

Fifthly, relates to an improvement in the "burners" required for the combustion of air so "benzolised," and consists generally in making the apertures, of whatever form, much larger than when used for the combustion of ordinary gas. The light from such burners will be greatly increased by the adaptation to them of suitable apparatus made of "platinum or palladium, or other "in-oxydisable metals."

Sixthly, relates to an "air holder," and consists of two round wooden or metallic plates, which are connected to each other by a belt of some length, or wide tube made of some flexible and air-tight material, such as india-rubber, thereby forming the sides or circumference of an air holder. Round this flexible tube are fixed, at suitable distances, belts or cords, to prevent it from bagging. When air is forced into this gasholder the upper round plate is elevated, and kept in proper perpendicular position by rods and eyes; and when the air is withdrawn it falls again, and with it the elastic tube collapses and "packs down regularly."

Sixthly, relates to "supplying a constant current of air to the "[patentee's] burners," and consists in causing the "common gas meter" to rotate by suitable mechanical means. The air will thus be drawn in through a tube and forced out through the exit pipe.

[Printed, 1s. 2d. See *Repertory of Arts*, vol. xviii. (*enlarged series*), pp. 305 and 368. *Mechanics' Magazine*, vol. lv., p. 456. *Patent Journal*, vol. xii., p. 131.]

A.D. 1851, August 28.—N^o 13,731.

FONTAINE MOREAU, PIERRE ARMAND le Comte de.—(A communication.)—"Improvements in apparatus for gas lighting."

These consist, first, in applying to the top of the chimney of an argand gas burner a disc, in preference made of porcelain, with an aperture in the centre of it, which can be more or less closed by means of a lid and screw, and producing thereby a stronger and more steady and calm light.

Secondly, in placing at the bottom of the chimney a diaphragm of "metallic cloth," through which the air has to permeate before reaching the flame.

[Printed, 5d.]

A.D. 1851, October 22.—N^o 13,783.

BOGGETT, WILLIAM, and PALMER, GEORGE HOLWORTHY.
—“Improvements in obtaining and applying heat and light.” These consist in various applications of gas, and gas apparatus for the purposes of “heating,” “lighting and heating,” “refracting light,” “cooking,” “heating and evaporating water and other fluids,” “warming and conveying air into conservatories, &c.;” “miscellaneous contrivances for the readier application of gas to “lighting and heating purposes;” “and the application to both “lighting and heating purposes of carbonic oxide.” The specification of this invention is accompanied by upwards of one hundred drawings, illustrative of the inventors’ various modes of making apparatus for the above purposes. The inventors make the following claims:—

“First, the several arrangements for heating apartments by the “burning of gas, or gas and air, in combination with solid, luminous, and incombustible substances, such as asbestos, respectively represented in the figures. Second, the heating of apartments without deterioration of the atmosphere thereof, by the “burning of uncarbonized hydrogen gas in open gas fire-places. Third, the constructing of gas burners for lighting and heating purposes, of the forms, or any of them, respectively represented “in” the “figures. Fourth, the placing and adapting of prismatic lenses, to increase the effect of gas and other lights in the manner exemplified. Fifth, the improvements in gas cooking apparatus represented, and more especially the various arrangements therein embodied, whereby the heat is directed in a downward direction upon the substances which are in the course of being cooked or heated. Sixth, the use for heating purposes, of gas burners, having lateral slits or openings between plates of cast-iron or other suitable materials, in place of round holes, for the emission of the gas where there is more than one such slit in the burner or when more than two such burners or parts of such burners are combined together, as before exemplified and described. Seventh, the combination of absorbents of heat with gas burners, in the manner represented. Eighth, the construction of gas stoves with angular reflectors, in the manner exemplified. Ninth, the combination of open gas fire-places with woven wire guards. Tenth, the use of gas burners of cast-iron, having slits cut therein for the emission of gas. Eleventh

" the heating of spatulas by gas, and the same method of using
" gas for heating laundresses irons and other similar irons, as ex-
' emplified. Twelfth, the apparatus for warming and conveying
" air to conservatories, &c. Thirteenth, the improved blow-pipe
" represented. Fourteenth, the apparatus for heating soldering
" irons. Fifteenth, the method of constructing ovens, exemplified.
" Sixteenth, the several arrangements of apparatus for heating
" fluids represented. Seventeenth, the gas gridiron represented.
" Eighteenth, the gas stoves respectively represented. Nineteenth,
" the application of gas heat in a downward direction, by means
" of parallel tubes placed near to each other and perforated at the
" bottom or sides. Twentieth, the use of soapstone in the con-
" struction of stoves, burners, and other gas apparatus. And
" lastly, the employment, in the application of the carbonic oxide
" of furnaces to heating purposes, of the different economical
" methods or processes specified under the eighth and last head of
" the present specification."

[Printed, 1s. 9d.]

A.D. 1851, October 22.—Nº 13,784.

PLATT, JOHN, and SCHIELE, CHRISTIAN,—“ Improvements
“ in machinery or apparatus for the preparation and manufacture
“ of fibrous materials; which improvements, or parts thereof, are
“ also applicable for the transmission of fluids and aeriform
“ bodies.”

These relate, first, to an improved “ fan or other impelling con-
“ trivance for the transmission of fluids and aeriform bodies.” Instead of the vanes revolving in a casing in the usual manner, drawing in the air at the axis and discharging it at the periphery, curved vanes or wings are attached to the surface of “ a species of conoidal sawcer,” which may be caused to revolve in a vertical manner, in a casing curved to correspond with the curve of the vanes, and so close to the case as to be only clear of contact. The air is drawn in at the axis and discharged over the periphery of the conoidal disc into an annular space behind, where it is caught by checking or delivering wings fixed to the opposite inner half of the casing, which wings gradually reduce the rate of revolution of the air and conduct it to a central discharge opening. These vanes begin tangentially, then diverge into a radial direction, or nearly so, as they approach the periphery of the disc, and terminate at

" their outer ends in quick curves, in a direction contrary to the " discs revolution.—(For the form preferred of the vanes, as also that of the checking wing, see drawings.)

These improvements relate further to " lubricating; to " cast-
" iron collar and bottom bearings for spindles;" to " beating
" cylinders of cotton machinery;" to " cop shapers of spinning
" machinery;" and to the " adaption of an additional shaping
" plate." (See Abridgments on Cotton Spinning.)

[Printed, 1s. 4d.]

A.D. 1851, October 23.—N° 13,785.

HENDERSON, DONALD.—" For an improved apparatus for
" generating gas, which apparatus may be used for heating and
" other similar useful purposes, and other apparatus for heating
" and ventilating."

These improvements consist, " firstly, in the apparatus used in
" conjunction with a kitchen range, or with a drying or heating
" stove, for the generation of carburetted hydrogen gas, wherein
" the condensed or first liquid products in the manufacture of gas
" are returned to the retort or retorts for further distillation,
" whereby a greater amount of gas is obtained, and the whole of
" the liquid decomposed."

" Secondly, in the application of a 'hydraulic valve,' or water
" lute to the channel through which the liquid product is returned
" to the retort, in order to prevent the escape of gas by that pas-
" sage, while, at the same time, the liquid has free access thereby
" to the retort by gravitation."

" Thirdly, in the arrangement of the hydraulic main condensers
" and pipes connected therewith in such positions as will permit
" the liquid product to return to the retort by gravitation."

" Fourthly, in the application of a safety valve for the purpose
" of preventing too great a pressure of gas accumulating in the
" retorts or gas holders." The sliding faces of the valves are
made respectively of a rectangular form and of a triangular form,
which gives an increased aperture for the escape of the gas in pro-
portion to the angle formed. They are actuated by the inflation
of an apparatus after the manner of a bellows.

" Fifthly, in the application of an arrangement of heating appa-
" ratus applied to baths, as herein-before described." The gas is
made to heat the water in a separate small boiler, and the draft
from the burners is carried along under in the bath in a channel.

"Sixthly, in the application of a gas ventilating apparatus," for the ventilation of churches or other buildings, by causing a draft through the burning of gas in a suitable apparatus.

[Printed, 1s. 5d. See Mechanics' Magazine, vol. lvi., p. 358.]

A.D. 1851, December 10.—Nº 13,855.

ARMAND, ETIENNE ALEXANDER.—"Improvements in the modes of distilling and treating organic substances and bituminous matters, and in the treatment of the products; together with the apparatus used for the said purposes."

Consisting, "first, in calcining or distilling solid organic substances or bituminous matters, by placing the said substances or matters in metal or earthenware cases, of any suitable shape, and introducing the said cases into the retorts, instead of placing the substances directly into the retorts, as heretofore practised."

"Second, collecting the volatile products from the calcination, as herein-before described, by which the said products being made to pass through hot pyrogenic oil, a part of the undensable gas is transformed into condensable vapour, and those vapours are condensed into liquids of different density, by passing through gases differently heated. When the vapours to be condensed are to be collected from processes, such as in the manufacture of coke, and therefore does not allow of using the above-described contrivance, the passing vapours may be caused to meet the warm oil, falling along a vertical column full of pebbles, or running in a very thin and wide stream in a shallow flue. In this case the uncondensed vapours escape into the chimney, and the oil containing the condensed vapours may be divided into bituminous matter and heavy oil, by distilling processes."

Third, in treating the light oils, heavy oils, and bituminous matters (for the purpose of purifying them), to the successive action of "nitrous sulphuric acid," or concentrated sulphuric acid with peroxide of manganese, lime water, water, a concentrated saline solution, composed of an alkaline chloride and alkaline nitrate, or anhydrous lime and potash.

"Fourth, a mode of distilling any kind of liquid organic substance, and bituminous matter, similar to that claimed for dry substances, under the first head; with this difference, that

" instead of placing inside the retort opened cases containing the solid substances, I place inside the retorts a closed case, with suitable openings; the said case being connected by any suitable providing contrivance, such as described with the vessel containing the liquid substances, which I prefer placing outside the retort; and further, a particular contrivance, as herein described, for heating the liquid substance on its way from the reservoir into the case."

[Printed, 11d. See *Repertory of Arts*, vol. xix. (*enlarged series*), p. 205. Mechanics' Magazine, vol. lvi., p. 298.]

A.D. 1852, January 20.—N° 13,904.

LOWE, GEORGE, and EVANS, FREDERICK JOHN.—" Improvements in the manufacture of gas for the purposes of illumination; and of improvements in the purification of gas."

These improvements consists, firstly, in regulating the quality of gas, "by combining such gases which possess different degrees of illuminating power." "By introducing such gases into retorts or vessels containing carbonaceous matters under distillation." The poor inflammable gases used for this purpose may be obtained from wood, sawdust, in a damp or dry state, spent tanners' bark, coal of an inferior description, or from peat distilled in the usual manner, or carbonic oxide, derived from carbonic acid, by passing the latter gas through a retort or furnace containing red or white hot coke. The addition of such poor gases to richer gases will equalize and improve them for the purpose of illumination.

Secondly, "in the use of anhydrous peroxide of iron," in the purification of coal gas, from sulphuretted hydrogen. The required peroxide may be obtained by heating to a dull red heat a mixture of caustic potash or soda and peroxide of iron, and afterwards washing out the alkali, or by other means. The peroxide may be used for the above purpose in any suitable manner; and its energies may be renewed again and again, by exposing it to the air.

Thirdly, "in the use of sulphite and bisulphite of lead for the removal of sulphuretted hydrogen from coal gas." These may be employed simply or together, mixed with water in a wet lime purifier. By burning the residue or deposit, when dried, sulphurous acid and litharge are obtained.

[Printed, 6d. See *London Journal (Newton's)*, vol. xli. (*conjoined series*), p. 248. Mechanics' Magazine, vol. lvii., p. 78.]

A.D. 1852, January 24.—Nº 13,912.

HILLS, FRANK CLARKE.—“ Improvements in manufacturing
“ and purifying gases, and in preparing certain substances for
“ purifying the same.”

Consisting, “ first, in obtaining gas by carrying up, by means
“ of steam or the gasses resulting from the decomposition of
“ steam, assisted by heat, the vapour of tar, or other hydro-
“ carbons, into highly-heated retorts, filled with coke or other
“ such carbon, to be decomposed.”

“ Secondly, in decomposing steam, or steam and hydro-carbona-
“ ceous vapour, by first heating coke or other carbon in furnaces
“ or retorts, to a great heat, by means of air forced or drawn into
“ the furnaces by any convenient methods, and then admitting
“ steam, or steam and hydro-carbon, to be decomposed, and which
“ admission of air and steam, &c. to be alternately employed.”

“ Thirdly, in treating or decomposing tar or other hydro-carbons,
“ either alone or with the gases formed by the decomposition of
“ steam, by causing the tar to drop upon red-hot coke, as before
“ described.”

“ Fourthly, the decomposition of tarry vapour in ordinary gas,
“ by passing it (either mixed or unmixed with the gases resulting
“ from the decomposition of steam), through red-hot carbon, in
“ the manner described.”

“ Fifthly, for purifying gas, the use of a mixture of sulphate or
“ muriate of lime, with either lime or magnesia, or both, but I do
“ not claim either of these substances alone.”

“ Sixthly, burning carbonate of lime or of magnesia, as de-
“ scribed, so that it may be re-used for purifying gas.”

“ Seventhly, renovating hydrated oxides of iron, or any other
“ oxides of iron that are capable of being renovated by atmospheric
“ air, (after they have become inert by taking sulphur from the
“ gas), by admitting or forcing atmospheric air into the purifiers
“ at the same time and in conjunction with the gas to be purified.”

“ Eighthly, loosening the said purifying material in the purifiers
“ (when it becomes too solid or impervious to the gas), by means
“ of a moveable false bottom in the purifier, on which the material
“ rests.”

“ Ninthly, rendering the spent oxides, which are no longer
“ capable of being profitably renovated by air, fit for re-use to
“ purify gas from cyanogen, by first freeing them from sulphur

“ and other impurities, and then using them in combination with
“ the alkalies and salts mentioned, after heating them together
“ to nearly a red heat.”

“ Tenthly, for the purpose of purifying gas, the using and re-
“ using any oxides, sulphurets, or salts of iron in combination
“ with the alkalies before mentioned, and adding a fresh portion
“ of alkali to the said mixtures as often as they require renovation.”

“ Eleventhly, obtaining cyanogen compounds from spent oxides
“ which have not been mixed with alkalies, and rendering the
“ said oxides fit for re-use for purifying gas, by first washing
“ them with a weak solution of soda or potash, or their carbonates,
“ so as to obtain the compounds of cyanogen taken up by the
“ material, and then burning off or otherwise removing the
“ sulphur.”

“ Twelfthly, the employment of oxides of iron in a granular state
“ for the purification of gas.”

[Printed, 5d. See Mechanics' Magazine, vol. lvii., p. 97.]

A.D. 1852, February 23.—Nº 13,974.

NEWTON, WILLIAM EDWARD.—“ Improvements in the manu-
“ facture of coke, and in the application of the gaseous products
“ arising therefrom to useful purposes.”

These improvements consist “ in the adaptation to ordinary
“ coke ovens of an apparatus, whereby the gaseous products
“ evolved during the combustion of coal therein may, without
“ interfering with the ordinary process of coking, be drawn off
“ and conveyed away to a receptacle or chamber, where they may
“ be separated from each other, and combined with other chemical
“ agents, to form valuable products, or used for some other useful
“ purposes.” This may be effected by adapting a flue to the
short vertical flues which rise from the top of coke ovens, and
causing (by means of a fan or otherwise) the smoke and mixed
gases and products of the combustion of the coal to enter a
divided chamber, wherein is placed a suitable refrigerating
apparatus formed of piping, supplied with cold water. In this
chamber the gases are cooled, and the soot, &c. are deposited.
From this the gases pass into an apparatus resembling a “ scrub-
“ ber,” the coke or other material in which is kept moist by the
dropping upon it of sulphuric acid or other suitable substance.
In this second chamber the ammoniacal salts are arrested, and

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“ or retorts, to a great heat, by means of air forced or drawn into
“ the furnaces by any convenient methods, and then admitting
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“ admission of air and steam, &c. to be alternately employed.”

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“ either alone or with the gases formed by the decomposition of
“ steam, by causing the tar to drop upon red-hot coke, as before
“ described.”

“ Fourthly, the decomposition of tarry vapour in ordinary gas,
“ by passing it (either mixed or unmixed with the gases resulting
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“ the manner described.”

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“ muriate of lime, with either lime or magnesia, or both, but I do
“ not claim either of these substances alone.”

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“ scribed, so that it may be re-used for purifying gas.”

“ Seventhly, renovating hydrated oxides of iron, or any other
“ oxides of iron that are capable of being renovated by atmospheric
“ air, (after they have become inert by taking sulphur from the
“ gas), by admitting or forcing atmospheric air into the purifiers
“ at the same time and in conjunction with the gas to be purified.”

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" agents, to form valuable products, or used for some other useful
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short vertical flues which rise from the top of coke ovens, and
causing (by means of a fan or otherwise) the smoke and mixed
gases and products of the combustion of the coal to enter a
divided chamber, wherein is placed a suitable refrigerating
apparatus formed of piping, supplied with cold water. In this
chamber the gases are cooled, and the soot, &c. are deposited.
From this the gases pass into an apparatus resembling a "scrub-
" ber," the coke or other material in which is kept moist by the
dropping upon it of sulphuric acid or other suitable substance.
In this second chamber the ammoniacal salts are arrested, and

may be drawn off in a concentrated state of solution, and be further evaporated by means of the heat of the main flue, above referred to ; the inflammable and incondensable gases remaining may be conducted, by means of piping, underneath the subliming apparatus or elsewhere, and burned with advantage.

[Printed, 1s. 9d.]

A.D. 1852, February 23.—N^o 13,984.

FONTAINE MOREAU, PETER ARMAND le Comte de.—
(A communication.)—“ Improvements in gas burners.”

These consist, first, “in constructing gas burners with several “ compartments placed above each other.” The interior of the burner may be divided into three compartments ; the gas is introduced into the middle one, descends to the lower one, from which it ascends through a tube to the upper one, whence it escapes to the burner. The effect of this is to equalize the pressure of the gas on the burner.

Second, “the current of air is supplied through orifices made “ in the glass, and is forced to pass through a metallic cloth, and “ the gas is made to egress from the burner to the place of con-“ sumption, through tubes adapted to the top of the burner.” The current of air necessary for the consumption of the gas is thus wholly passed through the aperture in the glass, instead of being admitted by the gallery, as usual.

[Printed, 7d.]

A.D. 1852, March 8.—N^o 13,998.

PERKINS, EDWARD MOSELEY.—“ Improvements in the manu-“ facture of cast metal pipes, retorts, and other hollow castings.”

These consist in making “core barrels,” which may be expanded and contracted at pleasure.

The “core barrel” may be made of three parts, joggle jointed. On the inner surface of these parts are inclined planes suitably placed. Through the “core barrel” is an axis and screw and crosshead, on which are placed projections which move on the inclined planes on the core barrel. When the screw is turned one way the core barrel is set out or expanded, and when reversed it is allowed to contract again.

[Printed, 6d. See Mechanics’ Magazine, vol. lvii., p. 238.]

A.D. 1852, April 24.—Nº 14,086.

HESELTINE, SAMUEL, the younger.—“ Improvements in
“ engines to be worked by air or gases.”

[No Specification enrolled.]

A.D. 1852, May 8.—Nº 14,116.

BOOTH, GEORGE ROBINS.—“ Improvements in the manufacture
“ of gas.”

These “ improvements consist in the direct use of seeds, leaves,
“ flowers, branches, nuts, fruit, and other substances and matters
“ containing oil, or oily or resinous matter, or other matter useful
“ in the manufacture of vegetable gas.”

“ The mode of using seed and constructing the apparatus used
“ may be the same as the apparatus used in the ordinary mode
“ of making gas with coal; but it is preferable to project the
“ seed, &c., into a red hot retort, and subjecting it for a certain
“ time to a proper heat, then withdrawing the expended resi-
“ dum, and again supplying the retort with another quantity
“ of seed, and so on, be the same more or less, at one time.”
The seeds used may be “ mustard-seed, rapeseed, linseed, dodda,
“ sesame, bene, gengelle, teel, palm nuts, ground nuts, cocoa
“ nuts, india-rubber, gutta percha, thyme, pitch pine, castor
“ seed, niger poppy, cotton seed, olives, the residuum of the
“ olive press, and that of other seeds,” or other similar resinous
or oily substances.

[Printed, 7d. See Mechanics' Magazine, vol. lvii., p. 416.]

A.D. 1852, May 22.—Nº 14,136.

SWARBRICK, JOHN.—“ Improvements in the method of ma-
“ nufacturing retorts used for gas and other purposes, and in the
“ apparatus connected therewith.”

To effect these improvements, “ first burn or fire the clay with
“ the coal or refuse that is got with it (if any) until the said coal
“ or refuse is reduced to ashes; then grind the clay and ashes
“ with a little water in the usual manner, but instead of making
“ it into a soft spongy substance, as done heretofore, keep it of a
“ thick consistency, only sufficiently moist to cause it to unite
“ when pressed together. If no coal or refuse is found with the
“ clay use a similar substance, or take different qualities of clay

" and mix them as before described, in such proportions as the
 " quality of the clay will require and experience prove necessary.
 " The moulds used are made of iron, wood, or other suitable
 " metal or material, of the shape and dimensions required, but
 " made in separate or detached lengths, from two to three feet
 " long, with flanges, by which they can be united by screw
 " bolts or other similar contrivances. Take one of these parts of
 " the mould and set it in an upright or perpendicular position
 " (not horizontal as heretofore); then make a core of wood, iron,
 " or other suitable metal or material, with a strong hook fixed
 " firmly in the top of it; the said core to be the size and shape
 " that the bore or interior of the retort is to be made. Then
 " place this core in the centre of the said mould, and place
 " guages or arms made of iron, wood, or other suitable metal or
 " material between the core and the mould to keep the core
 " firmly in its place."

When this is done the prepared clay is rammed firmly down; the core is then drawn up and the operation repeated, till the retort be completed. By these means the retort will be less likely to crack, and is ready for the oven so soon as formed.

[Printed, 3d. See Mechanics' Magazine, vol. lvii., p. 436.]

A.D. 1852, May 29.—N° 14,147.

LOSH, WILLIAM SEPTIMUS.—“ Improvements in the purification of coal gas.”

“ This invention consists principally in the application of chloride of lead to the purification of coal gas. Take chloride of lead in powder and mix it with about an equal bulk of coke in the state of coarse powder, with the very fine dust removed by a quarter-inch sieve, or with sawdust. One or other of these mixtures in a damp state is placed upon the shelves of an ordinary gas dry lime purifier,” and the impure gas passed through it in the ordinary manner.

“ The saturated chloride of lead is put into a lead vessel, and, by means of water, all the soluble compounds of ammonia, sulphur, &c., obtained in the process of purification already described, are washed out and afterwards evaporated to dryness, or otherwise made use of. The lead compound and coke or sawdust remaining in the vessel are now separated by means of a brake sieve, such as is used in washing lead ore.”

The separated lead is then "treated with hydrochloric acid, " and thereby reconverted into chloride of lead, and ready to be "employed as before."

[Printed, 3d. See *Repertory of Arts*, vol. **xx.** (*enlarged series*), p. 369. *Mechanics' Magazine*, vol. lvii., p. 495.]

A.D. 1852, July 12.—N^o 14,217.

JORDAN, THOMAS.—"Improvements in disinfecting essential oils, and in treating fatty matters obtained from shale, schistus, or other bituminous substances, and in retorts employed in distilling such minerals."

[No Specification enrolled.]

A.D. 1852, July 22.—N^o 14,238.

KIRKMAN, JOHN, and KIRKMAN, THOMAS NESHAM.—"Improvements in the manufacture of gas for lighting and heating."

Consisting, first, "in the mode of obtaining gas by the decomposition of water in close furnaces."

The furnace and ashpit in this case can be closed and rendered air-tight. Over the furnace, and heated by it, is a tubular boiler containing water for the generation of steam. A regulated supply of hot air is forced into the furnace through the ashpit, and the temperature of the furnace raised to the melting point of iron. A regulated quantity of steam is then also introduced near the bottom of the furnace. The resulting gases arising from this mode of internal combustion are caused to pass, first, through the tubes of the boiler, where they part with some heat to the water, then through tubes in an iron air chamber, where they part with more heat to the air in the chamber. The air in this chamber is being passed through by a blowing machine, and is on its way to the furnace, and is thereby heated before it enters the furnace. The mixed gases are then passed to the condenser, purifiers, and gas-holder, and may be employed in this state for the purposes of heating; or if carburetted by naphtha or other liquid hydrocarbons, may be used for lighting purposes.

Secondly, consists in a suitable arrangement of retorts, pipes, valves, &c., whereby the mixed gas produced as above, or other gases, may be enriched by conducting them, first, through coke

heated to a high degree, and then through heated retorts containing cannel coal, or tar, oil, pitch, resin, or similar substance under distillation.

Thirdly, relates to "a mode of carrying off the gas from retorts "to the receiver or gas-holder without the use of the hydraulic "main," and consists in superadding "a direct passage" for the gas to that usually employed, namely, through the hydraulic box or main. This direct passage may be closed when required by a suitable valve. The patentees likewise propose to clear those pipes near the retorts from all condensed matters by passing steam through them in a reverse direction, which will evaporate such substances. Such vapours may be passed through retorts and converted into gas.

Fourthly, consists in the use of the oxy-chloride or sub-chloride of antimony for the purification of gas. Such substances in a state of powder, and mixed with sawdust and some water, or in the state of solution, may be used for the above purpose, in the usual purifiers. The resulting muriate of ammonia may be recovered, and the antimony may be revived by the addition of muriatic acid.

[Printed, 3s. 11*d.* See Mechanics' Magazine, vol. lviii., p. 117.]

A.D. 1852, August 7.—N^o 14,254.

DIX, ALEXANDER MILLS.—" Certain improvements in artificial " illumination, and in the apparatus connected therewith, which " improvements are also applicable to heating and other similar " purposes."

This invention consists in " lighting and heating apartments " and other places by burning gas or other combustibles in " a close vessel or chamber, to which atmospheric air is sup- " plied by a tube or tubes [in a suitable manner], and from " which the exhausted or foul air, &c. is conveyed by means of a " tube or tubes, the said tubes not communicating with the at- " mosphere of the room or other place to be lighted or heated ; " also," in " the application of a current of water or other suitable " fluid to the exterior of the foul or exhausted air tube or tubes, " for the purpose of absorbing any desirable amount of heat " therefrom."

[Printed, 6*d.*]

A.D. 1852, August 12.—N° 14,260.

LAMING, RICHARD.—“ Improvements in the manufacture and “ the burning of gas, in the treatment of residual products of such “ manufacture, and of the distillation of coal or similar substances, “ and of the coking of coal.”

Consisting, first, “in enclosing ovens, wherein coal gas and “ heavy coke are simultaneously produced, in cases of sheet iron.”

Second, “the use of platinum channels or pipes for conveying “ superheated steam to materials destined to decompose it into “ gases, for giving heat or light by their combustion.”

Third, in burning off by a regulated heat the sulphur contained in the residual product of the purification of coal gas. “ The re- “ sulting mass, which consists chiefly of oxide of iron,” may be again used in the dry purifiers. The sulphurous acid produced should be condensed in gas liquor.

Fourth, in agitating the residue with water, and then passing it on to a metallic sieve, and again on to a fine wire gauze. The first catches the larger particles, the second those finer; and the liquor which passes through contains a sediment of oxide of iron, which may be collected, dried, and used again. The sulphur may also be separated by exposing such residuums to a current of superheated steam (say at 300° F.), which will carry the sulphur over into a receiver containing water.

Fifth, in mixing with coal gas as much oxygen as it contains sulphuretted hydrogen, and passing the mixture through the dry purifiers supplied with oxide of iron suitably placed. The oxide of iron thereby remains unchanged, and the use of it may be continuous until the deposited sulphur renders the material impervious to the gas.

Sixth, in obtaining oxygen gas by heating in a retort “ artificial “ peroxide of manganese” to a high degree. The artificial oxide so heated, if again moderately heated and exposed to the air, will reabsorb oxygen, and may be again and again used.

Seventh, in placing the “purifying material containing oxide of “ iron in two or more horizontal layers, each a few inches thick, “ and occupying the whole area of the purifying vessel.” The gas is caused to enter at the bottom, and to pass up through each successive layer, and to escape at some point above the upper layer; as the lower layers become exhausted and impede the gas, a

hole or opening is made, which allows the gas to flow freely under the second or succeeding layers, as the case may be.

Eighth, in applying an outer glass chimney to surround the inner one of a vertical argand burner. They are so arranged that all the supply of air to the argand burner has to descend between the chimneys, where it becomes heated, and, turning under the bottom edge of the inner chimney, there supplies the flame with its supporting air. The inner chimney should be made of glass containing no lead, to prevent its fusing.

Ninth, consists in converting the ammoniacal products of gas works into sulphate of ammonia; first, by known means, into ammonia or its carbonate; second, into the sulphate of ammonia by passing sulphurous acid over the solution contained on the floor of long shallow leaden chambers; thirdly, into "sulphate of ammonia" by exposing the "sulphite" to the action of air and water.

Tenth, in manufacturing "sulphate of alumina and alum." The coke of boghead or other coal is burned with a careful heat in the open air, and reduced to a white ash. The white ash is then "lixiviated" with "repeated doses of hot sulphuric acid of the strength of about seventy or eighty per cent." This solution may then be concentrated, or it may be made into alum in the usual way.

[Printed, 4d. See London Journal (*Newton's*), vol. xlvi. (*conjoined series*), p. 266. Mechanics' Magazine, vol. lviii., p. 175.]

A.D. 1852, September 7.—N^o 14,284.

FONTAINE MOREAU, PETER ARMAND le Comte de.—
"Improvements in producing gas, and in its application to heat
"and light" (being a communication from a foreigner).

These improvements consist, first, "in the construction of an apparatus for producing gas, in which the combustible is consumed." This apparatus may be a chamber or enclosed furnace made of iron of considerable dimensions, in which is placed the coal or other matter to be burned and converted into gas. A limited and moderated supply of air is permitted to enter by the fire bars, which are placed over an ashpan capable of being closed. By this means burning and distillation go on simultaneously. Carbonic acid is formed at the lower part where the actual combustion is going on, and is then converted into carbonic oxide, and finally the heat

and carbonic oxide together distil off the volatile parts of the fuel above. The result is a gaseous product, which passes out by a pipe at the top of the furnace. The combustion of fuel and production of gas are thus self-sustained. The gas so produced may be employed in heating locomotive and other engine boilers. The apparatus used as above may be placed on the "tender," or it may be placed where the fireplace should be in the locomotive. When placed on the tender the usual fireplace of the locomotive may be fitted with extra heat-absorbing surface.

By Disclaimer dated the 7th of March 1853, the Patentee disclaims that part of the "title" contained in the following words, "and light."

[Printed, 1s. 2d. See Mechanics' Magazine, vol. viii., p. 237.]

A.D. 1852, September 30.—Nº 14,312.

HUNT, WILLIAM.—" Certain improved modes or means of producing or obtaining ammoniacal salts." These "improvements in the means of producing or obtaining ammoniacal salts relate to an improved method of obtaining sulphate of ammonia from the ammoniacal liquors produced during the manufacture of coal gas. This object is effected by bringing these alkaline or ammoniacal liquors into contact with sulphurous acid gas, by causing them to percolate through a bed of pebbles, coke, or other hard substances upon which such liquors have no action; and during the operation which takes place in an apparatus [a tower in preference], a stream of sulphurous acid gas is made to pass through the bed of pebbles or coke, and when the sulphurous acid gas comes in contact with the ammonia, it combines therewith and produces the chemical compound known as sulphite of ammonia, which by exposure to the atmosphere, in the course of slow evaporation or otherwise, is made to absorb oxygen, and thereby become converted into a sulphate of ammonia. It is found convenient to obtain the sulphurous acid gas by burning off the sulphur from common coaly or other pyrites, and the gas so obtained is to be partially cooled (by passing under a pan containing water or other fluid) before it enters the condenser or apparatus in which it is to be brought into contact with the ammonia. In cases where the ammoniacal liquors can be obtained near to vitriol works" it is preferred to use "the spare gases which are usually allowed to escape

“ from the vitriol chamber, instead of generating gas on purpose.
 “ The sulphited ammoniacal liquor prepared by the above process
 “ must be afterwards transferred to lead or iron pans, in order to
 “ evaporate therefrom the aqueous particles. A portable cover is
 “ placed over the evaporating pans, and may be connected with a
 “ flue or pipe leading to a small condenser filled with coke; and
 “ upon causing this condenser to communicate with a chimney
 “ draft, the steam and any sulphite of ammonia in a gaseous
 “ state, and that may have escaped oxydation when driving off
 “ the last portions of water, will be drawn off, and the sulphite
 “ will be condensed in the condenser, and may be run back to the
 “ evaporating pans, where it will be re-exposed and evaporated
 “ with fresh liquors.”

[Printed, 7d.]

A.D. 1852, October 14.—Nº 14,322.

RICARDO, WALTER.—(A communication.)—“ Improvements in
 “ gas burners.”

These consist, “ firstly,” in “ the manufacturing of gas burners
 “ with two or more parallel slits at their ends or tops, so that the
 “ gas may issue through them in parallel sheets or flat streams.”

Secondly, in “ the manufacturing of gas burners with two or
 “ more slits at their ends or tops, so inclined towards each other
 “ that the issuing sheets or flat streams of gas may converge and
 “ meet together, forming a single flame.”

[Printed, 5d.]

A.D. 1852, October 21.—Nº 14,333.

BOGGETT, WILLIAM, and PETTIT, GEORGE BROOKS.—
 “ Improvements in obtaining and applying heat and light.”

The specification of this invention is accompanied by upwards
 of one hundred drawings of apparatus or parts of apparatus,
 shewing various modes of applying gas for the purposes of heating
 and lighting. These relate, firstly, “ to the warming of buildings
 “ by means of gas, and consist of various stoves or apparatuses for
 “ using asbestos in combination with gas, either carburetted or
 “ otherwise, the employment in connection therewith of tubes or
 “ hollow chambers, with or without the addition of heat-absorbing
 “ substances, to produce warm currents of air, and in constructing
 “ the said stoves or apparatuses, and the flues belonging to them,
 “ in such a manner as to effect the perfect removal of the heated

" vapours after having utilized them to the utmost extent before
" their final escape into the chimney, &c."

" Secondly, to the application of gas to culinary purposes. One
" of the chief features in these improvements is the process of
" roasting on the exterior of a gas apparatus by heat radiated from
" it in a horizontal direction, so as to preserve the meat from all
" contact with the gas vapours."

" Thirdly, comprises several miscellaneous contrivances for the
" better application of gas to various heating purposes."

" Fourthly, comprises certain improvements in heating fluids
" by gas."

" Fifthly, embraces several arrangements for heating bakers'
" ovens by gas, or gas and other combustibles."

" Sixthly, consists in the use of gas or mixed gas and air for
" heating caloric engines."

" Seventhly, the improvements in lighting consists in the
" substitution of lava for the perforated iron rings generally used
" in argand burners. For this purpose make use of a smooth
" close-grained description of lava that will work in a lathe, and
" is commonly of a greyish-blue colour. This being turned into
" rings about one quarter of an inch thick are inserted into the
" burners in the customary manner. They are then drilled, and
" are ready for use."

In carrying out these inventions the Patentees claim the use
of asbestos, talk, porous clay, clay lumps, perforated soap stone,
lava, and other substances having similar properties.

[Printed, 1s. 2d.]

PATENT LAW AMENDMENT ACT, 1852.

1852.

A.D. 1852, October 1.—Nº 111.

REMINGTON, JOHN, and BERRY, ZEPHANIAH DEACON.—
" Improvements in gas meters or apparatus for measuring gas or
" other elastic fluids."

" These improvements consist, first, in mounting the drum
" on an axle set at an angle to the horizontal line, and thereby

" causing it to rotate obliquely. By this arrangement one end
" of the axle may be always immersed in the water, while the
" opposite end works above the water level. The measuring
" drum is constructed with three or more compartments, which
" are united near the lower end, where an aperture for the
" water to enter is provided, so that it may circulate in and out of
" the compartments as the drum rotates. The gas enters the
" drum through a valve placed near the upper end of the axle,
" and upon one side of a vertical line drawn through the central
" axis, and after filling the space between the surface water and
" partitions in the drum it passes out at the opposite side of the
" valve away for consumption."

" Secondly, relates to dry gas meters," constructed "with what
" may be called a circular oscillating motion. The periphery of
" these two plates [an inverted conical plate and a circular flat
" plate] are connected together by a leather band (or band formed
" of any other suitable flexible material). The interior between
" the plates is divided into three or more equal compartments,
" the divisions or partitions being also formed of suitable flexible
" material. Each compartment is made gas-tight. The flat plate
" is stationary, and the conical plate has a rod fixed at its centre,
" at the lower end of which a ball is attached (or a pointed centre
" may be used); the ball works in a cup formed in the centre of
" the fixed plate, and the upper end of the rod is connected to a
" crank placed above the cone. The axle upon which this crank
" is fixed is made to carry a valve, which communicates with
" the pipe whereby the gas is conducted to the flexible chambers
" or compartments of the drum. This valve is so constructed
" and arranged as to regulate the entry and exit of the gas to and
" from the compartments of the drum or diaphragm; and as it
" rotates it communicates motion to the wheelwork of the index.
" If gas be admitted to each compartment of the drum or dia-
" phragm in succession it will raise that side of the conical plate
" which is open to the inlet, and depress the opposite side which is
" open to the outlet; and the action being governed by the radius
" of the crank creates a rolling oscillating motion in the conical
" plate of the drum, and at the same time a continuous rotatory
" motion is communicated to the axle upon which the crank is
" fixed, and which works the valve and the wheelwork of the
" index."

[Printed, 1s. 8*d.*.]

A.D. 1852, October 1.—Nº 137.

JACKSON, ARTHUR.—“ Improvements in gas burners.” These consist in applying “ a bent wire over the jet so as to be included in and covered by the flame, by which increased effect will be obtained.”

[Printed, 4*d.*.]

A.D. 1852, October 2.—Nº 181.

NEWTON, WILLIAM EDWARD.—(A communication.)—“ Improvements in governors or regulators for regulating the pressure of gas as it passes from the main or other pipes to the burners.”

These may be effected by balancing the valve through which the gas is caused to pass on its way from the main to the burners, by means of a disc or inverted vessel, the edges of which dip into mercury in preference. The valve and disc are connected to each other by means of an oscillating beam or lever. The desired flow of gas to the burners is obtained by the action of the gas on the disc, which is elevated or depressed according to the pressure in the main, and thereby closes or opens the exit valve more or less as may be adjusted, by means of counterpoising weights.

[Printed, 5*d.*.]

A.D. 1852, October 6.—Nº 264.

NEWTON, ALFRED VINCENT.—“ Improvements in apparatus for manufacturing gas and coke.”—(A communication.)

These embrace several “ improvements upon an invention patented by Pauwels and Dubochet on the 23rd April 1850, and also improvements upon an invention communicated to me from abroad, patented on the 27th May 1852,” and consist, first, “ in applying the heat to one side only [the under side in preference] of the inclined distilling chambers, whether straight or curved.”

Second, in constructing the “ door of the distilling chamber,” so that it may “ rock upon a centre pin and present to the charge of coal a segment of a circle.”

Third, in the addition of a “ caloric reservoir,” whereby heat absorbed during one operation will be given out during the succeeding one.

Fourth, relates to "horizontal ovens," shewing certain improved arrangements of parts where the heat is applied as above, and where the "caloric reservoir" is also applied.

Fifth, consists in the application of an "oscillating regulator" to regulate the "draw off" of the gas from the retorts. This is effected by a counterpoised floating bell working in a cistern of water. The interior of the bell being in communication with the gas main, the bell is elevated or depressed according to the pressure of the gas in the main, and thereby, through a suitable arrangements of levers and rods, closes or opens, more or less, as required, a valve on the main as well as the throttle valve of the steam engine. "By this means the action of the extractor will be "regulated according to the quantity of gas produced."

[Printed, 2s. 8*d.*]

A.D. 1852, October 6.—Nº 276.

WARREN, FRANCIS.—"Improvements in gas burners."

These consist in applying "to argand, fish-tail, bat's-wing, or "other form of burner a wire or wires to divide the flame, and be "kept heated by it by reason of the wire or wires being within "the flame, thereby obtaining more complete combustion of the "gas."

[Printed, 4*d.*]

A.D. 1852, October 11.—Nº 331.

LAIDLAW, DAVID.—"Improvements in the manufacture or "production of gas burners."

These consist, first, in "casting" to the required form the "burners" in metal or other moulds with suitable cores from an alloy of easy fusibility, and not readily oxidized, such as "tin or tin and regulus of antimony." The actual egress apertures may be so formed, or they may afterwards be bored.

Second, in gilding or plating burners so formed with gold or silver as a further protection against oxidation. Nibs of glass, china, &c., may be inserted into the top of such burners.

[Printed, 2*d.*]

A.D. 1852, October 12.—Nº 345.

PERKES, SAMUEL.—"Improvements in navigable vessels and "propellers."—(Provisional Protection only.)

These relate to "a shape or form for the hull of boats;" to pontoons with paddle wheels; to building ships; to sails made of

metals or wood ; to enamelling or vitrifying iron or copper ; to paddle wheels ; &c.

The patentee "also proposes to use the smoke from steam vessels, and convert the same into gas, and light up vessels with the same in certain cases where required, or use other materials for generating and using gas on board ships or sailing vessels for lighting and cooking and other useful purposes, instead of ordinary fires and candles. Also to employ warm water or steam pipes for the purpose of warming the apartments, &c., instead of fires. Also the manufacture and application of gas on board sailing vessels, and the use of the same thereon."

[Printed, 3*d.*.]

A.D. 1852, October 14.—N° 382.

CHISHOLM, WILLIAM.—"Improvements in the purification of gas, and the obtention of certain products during the process of such purification."

The substances which may be used for this purpose are "charcoal made from peat," or from "sea-weed," to which is added chloride of sodium and commercial superphosphate of lime; as also, if desired, the oxysalt, chlorides of calcium and magnesium, potassa, and nitrates, bisulphate of potassa, sulphate of magnesia. When such mixtures are exposed in dry purifiers to the action of the impure gas, the gas will become purified, and the product will be a "manure analogous to guano." Two purifying vessels may be employed, one to take up the "ammonia," and the other the "hydrosulphuric acid;" and the peat charcoal preferred is that containing considerable portions of "iron, alumina, silica, and alkalies." When the charcoal mixture has become exhausted, it may be partially or wholly revived by passing through it air moistened with steam. A solution of hydrochloric, sulphuric, or nitric acids, more or less diluted, may be added to peat charcoal, and thereby form an effective purifier. The ammoniacal waters in the hydraulic main may be absorbed by the addition of charcoal.

[Printed, 3*d.*.]

A.D. 1852, October 14.—N° 383.

GRANT, DONALD.—"Improvements in the means of applying the heat derived from the combustion of gas."

This invention consists, first, in applying flues or pipes to gas stoves used for heating apartments, up through which are caused

to pass currents of fresh air taken direct from the outer atmosphere, and allowed to flow when heated into the apartment from their open upper ends.

Second, in utilizing the heat in cooking stoves, "by surrounding a burner (such as that which is ordinarily employed for heating a stew pan or boiling a kettle) with a coiled pipe connected at both ends with a boiler or other receptacle for liquid, and by this means creating a circulation in the liquid at the expense of the radiated heat which would otherwise be lost, the vessel which is set above the burner being heated by the direct action of the flame."

Third, in the use of glass or earthenware "panels formed of slips not deeper than two or three inches," to be fitted into the frame of the stove to prevent radiation of heat; and in the application of double doors to the cooking stove, the inner one being made of "glass," and the outer one of "earthenware."

[Printed, 6*d.*.]

A.D. 1852, October 14.—N^o 390.

SWINDELLS, JOHN, and NICHOLSON, WILLIAM.—"Improvements in obtaining oxygen gas, and applying it in the manufacture of various acids, [such as sulphuric, oxalic, acetic, and nitric acids], and chlorine, for oxydating metallic solutions, and for ageing and raising various colouring matters."

"That part of this invention relating to the production of oxygen gas is as follows:—Into a number of earthenware retorts, or of iron lined with earthenware, fixed in a furnace similar to retorts for producing coal gas, and connected with a gasometer to receive the gas as it is produced, is introduced a quantity of barytes, commonly called protoxide of barium, either alone or mixed with as much powdered silica, lime, magnesia, or alumina, or silicate of alumina, or a mixture of all or any of these substances, in order to keep the barytes from acting on the retorts, and also to keep the barytes in an open or porous state to prevent it from fusing. We prefer to operate on a mixture of barytes with all or any of these substances, so that the barytes amount to at least fifty per cent. of the mixture; we then put as much barytes or the barium mixture into the retorts as shall cover the bottom thereof about two or three inches deep, and pass a stream of atmospheric air over the same, the mixture being kept at a dull red heat; we use both hot or cold air as the

" temperature may require. If the retorts become too hot by
" passing the heated air through them, we then change to cold air,
" and so regulate the temperature until the protoxide of barium is
" converted into the deutoxide, commonly called the peroxide of
" barium. When this has been effected, we open the communica-
" with the gasometer, and then raise the temperature of the retorts
" by increasing the firing, and at the same time allow a moderate
" quantity of steam, either at a low or elevated temperature, to
" pass into the retort until the oxygen gas and some small quantity
" of carbonic acid gas arising from the use of common air, together
" with vapour of water, is passed into the gasometer; the steam
" is condensed into water, and the carbonic acid present is re-
" moved by lime added to the water in the gasometer."

[Printed, 3*d.*.]

A.D. 1852, October 18.—N° 427.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(A communication.)—“ Improvements in the manufacture of fuel, part
“ of which improvements are applicable to the manufacture of
“ gas and soda, and freeing metals from extraneous substances.”
—(Provisional Protection only.)

These improvements relate, “ first, to the melting of metals,
“ and particularly the manufacture of cast iron, to obtain the
“ same product as that which is obtained with the carbon of
“ wood.”

“ Second, to the fining of metals, and particularly cast iron,
“ in replacing the German fire or ‘ comlois,’ the carbon of wood,
“ by the new combustible, which gives place to the same product
“ as the vegetable combustible.”

“ Third, treatment of or by the method called Catalonian, or
“ any other direct method in employing the new combustible, by
“ substitution on carbon of wood.”

“ Fourth, cementation, soldering, or fusion of metals, either
“ rough or in crucibles.”

“ Fifth, the employment of improved fuel in the heating of
“ evaporating boilers, to avoid the action of sulphurous gas
“ which attacks the boilers.”

“ Sixth, the employment of an improved fuel for domestic pur-
“ poses, to escape the action of deleterious gases either on men or
“ other objects.”

" Seventh, the employment of a fuel not washed, and even
 " overcharged with salt, to bring into the apparatus reagents of
 " fusion and chemical decomposition again in certain exceptional
 " cases for domestic purposes."

[Printed, 3*d.*.]

A.D. 1852, October 19.—N^o 438.

HARCOURT, JOSEPH, and HARCOURT, WILLIAM.—(Received provisional protection only).—“The application of porcelain, glass, or earthenware to articles in which or for which those materials have never heretofore been used.”

The Patentees enumerate a number of articles, in the manufacture of which porcelain, glass, or earthenware may be employed, and included in these are “certain parts of gas fittings.”

[Printed, 2*d.*.]

A.D. 1852, October 19.—N^o 443.

CHISHOLM, WILLIAM.—“Improvements in obtaining caustic soda and other substances from the residues of articles used in the purification of gas.”

These improvements may be effected by using equal parts of “peat charcoal” and “common salt” in the dry lime purifier, for the purpose of purifying gas. “The chloride of sodium is decomposed by the hydrosulphuric of ammonia contained in the gas, “a hydrochlorate of ammonia and hydrosulphate of soda are “formed.” This mixture, or a clear solution from it, may be heated in a suitable apparatus when “hydrochlorate of ammonia” will be sublimed, and the “caustic soda” remain in the retort. The “hydrochlorate of ammonia” may be mixed with “carbonate “of lime,” and distilled, and the resulting carbonate of ammonia passed into a second retort containing charcoal and chloride of sodium. Here the chloride of sodium will be decomposed, its chlorine combining with the ammonia, and the carbonic acid combining with the soda. This mixture may be heated as above, when a similar result will take place. This process may be “a “continuous one,” the ammonia being always recovered.

[Printed, 3*d.*.]

A.D. 1852, October 20.—N^o 452.

CARNABY, JOHN.—“Apparatus for turning, managing, and “regulating the main taps of gas pipes laid on to houses or

“ buildings at a part of the house or building distant from the
“ main tap.”

The object of this invention is to be able to command the main tap without being under the necessity of going to it. This may be effected by various apparatus, such as by a weight or a spring attached to the key, which may be pulled from a distance by means of a wire, rod, chain, &c.; or two wires may be used and the weight or spring dispensed with; or gearing may be employed for this purpose, consisting of a suitable adaptation of shafting and wheels, rack and pinion, or other mechanical arrangement, which will effect the required purpose.

[Printed, 5*d.*.]

A.D. 1852, October 22.—N^o 485.

SOUCHON, JEAN MARIE.—“ Improvements in the manufacture and purification of gas for illumination, and certain products therefrom, and in apparatus for that purpose.”—(Provisional Protection only.)

“ The gas obtained by the destructive distillation of coal or
“ other bituminous, carbonaceous, or nitrogenous matter is passed,
“ together with the tar and ammonia which accompany it, through
“ a heated retort containing potash or soda in a caustic state, or
“ combined with carbonic acid or other acid, and either alone or
“ mixed with carbonaceous or other substances. The potash or
“ other alkali is agitated by an agitator with a perforated disc at
“ each end, inclosed in the retort, so as continually to expose a fresh
“ surface, or it is mixed with charcoal or other solid matter, so as
“ to form a porous mass.” “ The effect of this operation is to de-
“ compose a portion or the whole of the tar, and convert it into gas,
“ and also to produce a quantity of cyanide or ferrocyanide of
“ potassium or sodium, which is afterwards extracted and
“ crystallized or used in the production of other compounds of
“ cyanogen. The gas, on leaving this retort, passes through a
“ stuffing box or other joint into a series of revolving purifiers,”
so arranged that “ the pressure on the gas in the retorts may be
“ reduced to that of the gasometer, while the advantages of wet
“ purifiers are obtained without increasing the pressure in the
“ retorts.”

[Printed, 2*d.*.]

A.D. 1852, October 23.—N° 493.

PRICE, GEORGE.—“A new or improved gas stove.” This invention consists “in the application of circular or argand burners “to the construction of gas stoves for heating, ventilating, “cooking, manufacturing, and such other purposes as the said “stoves are or may be applicable to.” In the drawing given of one mode of applying the argand burners a deflector or inverted cone is introduced, which contracts the passage for the heated air and products of combustion; the current is thereby checked, “and the heat thereof more effectually absorbed by the sides of “the stove than when the opening at the top of the stove is not “contracted.”

[Printed, 6*d.*]

A.D. 1852, October 27.—N° 531.

EVANS, GEORGE.—“Improvements in treating peat and other “carbonaceous matters.”—(Provisional Protection only.)

To prepare a fuel, “take recently cut peat abounding in water, “seldom under 75 per cent., and, to about twelve parts thereof, “add one part of caustic anhydrous lime, and one part of “peat, wood, or other charcoal, and mix them intimately.” For “the second fuel, take peat charcoal or any other charcoal, “and mix it with coal tar or the pyrogenous fatty matter left “from the distillation of peat, either simply or combined, to “which sometimes add lime, in varying proportions, until a dry “or nearly dry compound is produced. This preparation is “recommended principally for use in the gas retorts usually employed in the manufacture of coal gas.”

The “third process consists in collecting the dry disintegrated “matter called ‘mull or mullock,’ abounding at all periods of “the year on the surface, and in the ruts and ditches of most “peat moors, which, mix with the wet fresh-raised peat, occa- “sionally adding lime or charcoal, separately or in combination, “thereby materially facilitating the production of a fuel requiring “less artificial drying than ordinarily.”

[Printed, 4*d.*]

A.D. 1852, October 29.—N° 563.

BOWER, GEORGE.—(Provisional Protection only.)—“Improve- “ments in gas stoves or fireplaces.”

The apparatus employed may "resemble a common register fire-grate, with the essential difference that it may stand independently and quite isolated from the wall." "The gas burner is of the form technically called 'lobster back,' and is placed in the position occupied by the fuel in a common grate, the gas jets of flame being strewed over with disintegrated asbestos, on which the flame plays." The heat is absorbed by the back and sides of the grate, and heats the air contained within sheet spaces surrounding the fireplace. The air is supplied cold from the outside, and delivered heated into the apartment. The deleterious products of combustion are carried directly to the flue.

[Printed, 2*d.*.]

A.D. 1852, November 1.—N^o 598.

BILLOWS, HENRY BROCK.—"Improvements in the construction of gas burners for illuminating and heating purposes."

These improvements consist, firstly, "in arranging or combining together two or more of the ordinary burners, known as fish-tail or bats-wing burners so that the two or more flames blend and form one flat uniform flame, giving increased illuminating power, with a smaller consumption of gas." Secondly, "in applying to the ordinary argand burner a central tube, with a single jet burning within the hollow flame, and also the application of regulating screws for adjusting the height of each flame." Thirdly, instead of using wire gauze to prevent the flame passing down when air and gas are consumed together, "a coil" is used, "formed of strips of metal plate alternated with strips of the same metal, having a corrugated surface, by passing it through grooved rollers; this arrangement allows a free passage for the mixed gases, but effectually stops flame." The coil is enclosed in a metal tube.

[Printed, 7*d.*.]

A.D. 1852, November 2.—N^o 613.

BIANCHI, MAURIZIO.—(A communication.)—"Improvements in electro-magnetic apparatus for generating gas, applicable for motive, lighting, and heating purposes."—(Provisional Protection refused.)

This invention "consists in certain new arrangements and combinations of electro-magnetic apparatus for the decomposition of water, whereby a rapid and continuous supply of gas is generated, which, applied to a engine almost similar in construction to the ordinary steam engine, produces an efficient motive power; it forms also an excellent lighting and heating gas."

[Printed, 2*d.*]

A.D. 1852, November 6 — N° 663.

AUGIER, JOSEPH VICTOR — "Improvements in the manufacture of gas, and in the machinery or apparatus employed therein" — Void by reason of notice to proceed not having been given within the time prescribed by the Act.)

Consisting, first, in "the production of a greater volume of illuminating carburetted hydrogen gas from the same weight and the same quality of coal or other azotized matter producing the aforesaid gas, or from the gaseous hydro-carburets of the said matters, as well as from any other liquid hydro-carburets."

Second, in "the production of the aforesaid gas without hydraulic pressure on the retorts or other carbonizing apparatus during about nine tenths of the time employed in the operation heretofore producing illuminating gas."

Third, in "the production of the alkaline cyanurets of potash and soda, by means of liquid or gaseous hydro-carburets in the operation by which the gas is evolved, these cyanurets proceeding from the coal or other azotized matter."

Fourth, in "the purification of the illuminating gas by means of substances of which the greater part has been already employed in this purification; but so that in the new operation, contrary to the mode at present in use, the whole of the apparatus is reduced to a rotatory apparatus, with the exception of the apparatus in which the cyanurets are produced, and the illuminating gas obtained from tar and its hydro-carburets in the form of vapour at the period of their formation from coal or other azotized matter."

[Printed, 2*d.*]

A.D. 1852, November 15.—N° 754.

RAE, WILLIAM FRASER.— "Improvements in gas-heating and cooking apparatus."

These improvements consist, first, in a “general arrangement and construction of apparatus or means for heating and cooking. Second,” in “constructing gas-heating apparatus with duplex chambers, to produce heated air spaces, in combination with an expanded concave cover or top to diffuse and conduct the heat. Third,” in “the application and use of reflectors for heating and cooking apparatus. Fourth,” in “the adaptation of a concave reflector beneath heating and cooking burners. Fifth,” in “the application and use of overhanging covers for protecting the gas burners. Sixth,” in “arranging heating and cooking apparatus, wherein the burners themselves are made to heat the gas prior to combustion thereof. Seventh,” in “the application and use in heating and cooking apparatus of burners of the bats-wing or fish-tail class, or other burners of diffused flame consuming their own smoke. Eighth,” in “the application and use in heating and cooking apparatus of enamelled reflecting surfaces on the inner side of duplex air chambers or spaces. Ninth,” in “heating water, and producing a heated fluid current by means of an annular water space, with tubular connexions. Tenth,” in “deflecting and diffusing the heated air by means of a deflecting cover. Eleventh,” in “the system or mode of heating boiling or steaming apparatus by means of air passages passing through such apparatus, and communicating with burners beneath.”

[Printed, 7*d.*.]

A.D. 1852, December 6.—N^o 969.

GAUTIER, ANDRÉ JACQUES AMAND.—“An improved treatment of peat.” Consisting, first, in rasping and cutting the peat by suitable machinery in contact with water, and moulding the resulting deposit. Second, in drying it in stoves, or by centrifugal force, and mixing it, when desired, with “resin.” When mixed with resin or not, it may be substituted for wood or coal for fuel; but when used for cooking it should be carbonized in a retort suitably arranged. The gases evolved may be collected in a gas-holder, and used for the purposes of heat and illumination. Peat so purified for domestic purposes may be deprived of “unpleasant odour” by plunging it into “a water bath acidulated with pyroligneous acid,” or by submitting it to the action of a “damp chloride.” When it is desired to obtain “decolorizing charcoal,” the purified

peat paste, before moulding, should be submitted to the "action
" of hydrochloric acid, diluted with water," for "one hour or
" less."

[Printed, 4*d.*.]

A.D. 1852, December 6.—N° 973.

LAMING, RICHARD.—(Provisional Protection only.)—“Im-
“ provements in purifying gas, and in obtaining from the pro-
“ ducts resulting from the purification of gas certain useful
“ compounds.”

These consist, first, “in purifying gas by means of a solution
“ of bone, phosphate, apatite, or coprolite in muriatic or nitric
“ acid, mixed with sulphate or muriate of magnesia, either in a
“ fluid state, or absorbed into sawdust, or any other convenient
“ absorbent matter; the object being to purify the gas from cer-
“ tain of its impurities, and by their means to obtain ammoniacal-
“ phosphate of magnesia, muriate or nitrate of ammonia, and
“ phosphate, carbonate, and sulphate of lime.”

Second, in purifying gas by means of magnesian limestone,
“ burned into a caustic state and slaked, and in afterwards con-
“ verting the residual sulphuret of magnesium into sulphate of
“ magnesia by roasting or other mode of oxidation.”

Third, “in purifying gas by means of the aforesaid magnesian
“ compound, or lime mixed with sulphate of soda or sulphate of
“ potash.”

Fourth, “in purifying gas by means of oxides and salts of
“ antimony, for which purpose they may be used either in dry or
“ wet purifiers.”

[Printed, 2*d.*.]

A.D. 1852, December 14.—N° 1059.

FLORET, JOSEPH PAUL MARC.—“An improved method of
“ producing simultaneously gas light and lime or plaster.”

“This invention consists in an improved method of producing
“ simultaneously gas light and lime or plaster. There is in this
“ case no fuel used but that which is necessary for the baking of
“ the calcareous matter or gypsum, and consequently the lime or
“ mortar may be made at a less expense. The oven is constructed
“ in the shape of two truncated cones, joined at their bases. This
“ basis may be wide or oval, so as to allow of placing two or

“ several retorts. A vault is made in the centre of the oven or furnace, at the height of the greatest transversal diameter. The retorts are placed on this vault, and fixed at their bases to the case of the oven, which is of refractory bricks. The mouths of the retorts come out on the opposite side, and are seen out of the wall. It is, as usual, by these ends that the retorts are filled. The baking of the lime or mortar is made as in continuous ovens or kilns, not raised to a high temperature, by a mixture of calcareous matter or gypsum, and coal or coke in suitable proportions, introduced in the upper opening of the kiln. The lime or plaster being baked becomes red hot, incandescent on the retorts, and circulates round them and heats them. The lime or mortar is withdrawn by the mouth of the kiln. The distillation of the coal is thus effected as perfectly as in a furnace specially adapted for the purpose. The gas is conducted from the tubes of the retorts into the gas barrels, and the remainder of the manufacture is accomplished in the usual manner.”

[Printed, 7½d.]

A.D. 1852, December 16.—N° 1086.

MICHIELS, GEORGE.—“ Improvements in the manufacture and purification of gas.”

Relating, first, to the application, in the process of making gas, “ of the oxygen of the atmosphere,” after it has been “ separated from the nitrogen,” to “ bituminous coal or other material containing carbon, anthracite, coal, or coke,” contained in a suitable gas generator. The oxygen being caused to pass through a “ layer of the ignited carboniferous matter,” will produce “ oxide of carbon,” and “ steam” being also introduced, will yield an additional quantity of “ oxide of carbon” and “ hydrogen,” thereby furnishing a combustible gaseous mixture highly useful for the production of heat. The oxygen required may be obtained by heating the “ oxide of barium.”

Second, consists in purifying gas by “ the injection of oxygen into the current of gas coming from the retorts.” About double the quantity should be added of oxygen “ than would be necessary for forming with the sulphur [in the gas] hypo-sulphurous acid,” the result of which is, that when the foul gas passes through the lime purifiers, the sulphuret of calcium, ordinarily formed there,

" is transformed by the oxygen into hyposulphite of lime, and this " hyposulphite of lime is subsequently converted by the ammonia " of the foul gas into hyposulphite of ammonia, and the lime " being set at liberty serves for further purification." A similar result, but less efficient, may be obtained by passing through the lime a large quantity of air continuously for several hours.

[Printed, 5*lb.*.]

A.D. 1852, December 18.—N^o 1106.

CLAY, JOHN.—" Improvements in the manufacture of coal gas."

These improvements relate to the purifying of gas by removing the ammonia and sulphuretted hydrogen. For this purpose the patentee uses " peat charcoal in combination with lime or other " matters " " The other matters " may consist of " common salt " and pulverized iron ore." The iron ore should contain an oxide of iron ; and the ore known as the " red hematite " is preferred. " When these ingredients have been well mixed, they will be " ready for use, and are employed in precisely the same way as " lime is now used in the ordinary dry lime purifier."

[Printed, 2*lb.*.]

A.D. 1852, December 22.—N^o 1132.

HILLS, FRANK CLARKE.—" Improvements in purifying gas."

Consisting, " first, in using lime, or magnesian lime, slackened " with sulphuric or muriatic acids, to bring the lime to a powder."

" Second, in using lime slackened with solutions or mixtures of " either of the sulphates, or per-sulphates, or bi-sulphates, or " muriates of iron, or sulphates or muriates of manganese or lime, " or the sulphate of alumina."

" Third, in using lime, slackened or partially slackened, with water, " and mixed with any of the said sulphates or muriates, or any " combination of them, in a crystalline or solid form, for the pur- " pose of separating their particles, and exposing their surfaces to " the gas."

" Fourth, in using slackened lime, mixed with such oxides of iron " as are effective for purifying gas, the lime being chiefly for the " purpose of dividing and exposing the said oxides to the gas."

" Fifth, in using spent lime mixed with the aforesaid salts or " their solutions, for the purification of gas, as herein-before " described."

[Printed, 3*lb.*.]

A.D. 1852, December 24.—N^o 1160.

MICHELS, GEORGE.—“Improvements in the manufacture of “gas.”

“The object of this invention is to increase the power of the gas manufacturer by a peculiar mode of constructing and working a retort of large dimensions [say thirty feet in length, two feet in height and nine feet in width], which is constructed of fire-bricks, and which are cemented together with a metallic vitreous preparation, which, when subjected to the heat necessary for making gas from coal, makes a glaze, and renders the bricks impermeable to gas. The best preparation, I believe, for such purpose is silica, lime, potass, soda, magnesia, alumina, oxide of iron, oxide of manganese, and borax. I do not, however, confine myself to these matters. The retort has a cover at each end, and when a charge has been completed, I cause, by mechanical means, a piston or surface equal to the section of the retort to be moved through it, driving before it the coke, which I receive in an oven capable of being closed, and when closed I introduce steam, by which I obtain superior coke. The retort is formed with openings at its upper side, with suitable covers, and trucks on railways supply the requisite charge of coal, which is ground. The piston which I use for forcing out the coke is formed with teeth at its lower edge, and by moving it to and fro in the retort the charge is distributed therein.”

[Printed, 11*½*d.]

A.D. 1852, December 24.—N^o 1161.

BOWER, GEORGE.—“Improvements in the manufacture of gas for illumination.”

Consisting, “first, in a compact general arrangement and construction of apparatus or means for the manufacture of gas for illumination.”

“Second, in the application and use of retorts, with ridged, angular, or undulating bottoms, for the purposes of increasing the heating surface and expediting the process of carbonization.

“Third, in the system or mode of arranging and constructing gas apparatus, wherein the hydraulic main, condenser, washer or scruber, and purifier, are all combined in one apparatus.”

[Printed, 6*½*d.]

A.D. 1852, December 28.—N° 1184.

CLEGG, SAMUEL.—“ Improvements in apparatus for measuring “ gas.”

By this invention the gas as it flows from the street main into the meter is regulated to one uniform pressure by the gas governor or regulator, patented by S. Clegg in 1815. “ The gas issuing “ from this governor is conveyed through a slide valve into the “ gas-holder or hood of a second instrument of a like nature; this “ gas-holder or hood rising or falling, decreases or increases the “ area of the opening of the slide valve [to which it is attached by “ a lever and rod]; and since the pressure of the gas arriving at “ the opening of the slide valve is rendered perfectly equal by the “ first-named governor, the quantity of gas passing through equal “ openings, will always be the same.” When no gas is being consumed, this gas-holder or hood rises and shuts off the gas, but when the burners are lighted, or gas otherwise consumed, the gas-holder falls and thereby opens the valve and allows the required quantity of gas to pass. The extent of the opening of the valve, along with the duration of the opening, thus gives the mode of measuring the quantity of gas passing. This is ascertained by clockwork, actuating a lever at a uniform speed, the length of the strokes or vibrations of said lever being influenced by the position of both the slide valve and the gas-holder. The extent of this path or vibration is made to give a corresponding extent of motion to the index of the meter through suitable levers, rods, and a pall acting on a ratchet wheel.

The governor which equalizes the pressure of the gas entering the meter, although not a new instrument, is claimed when “ adopted “ as part of a meter.”

The seat of the valve should be placed at such an angle with the horizon, that any moisture will drain off from its surface, and the sides sloped, and the upper edge of the plate made sharp.

The speed of the clock spring is preserved uniform by the regulating influence of the flow of a given quantity of mercury from one vessel to another through a narrow aperture; the mercury flows through the small opening from the higher vessel to the lower one, till its gravity depresses a spring and lever, and thereby disengages it from a stop on a wheel on the first motion *shaft of the clock*, and allows it to make a quarter turn and so on; *in so doing the mercury vessels*, which are placed obliquely towards

each other, are also turned round, so that the mercury begins again to flow through the aperture, and thus the regulating motion given to the clock is continuous and uniform. In case the clockwork should stop or not be wound up, the outlet valve for the gas becomes closed. This is effected by attaching the valve rod to the top of an elastic vessel, inflated by means of a small bellows worked by the clockwork ; when the clockwork ceases, the air from the inflated vessel escaping by a small hole, allows it to subside, and thus lowers the exit valve on its seat.

[Printed, 7*½*d.]

A.D. 1852, December 29.—N^o 1188.

WHICHCORD, JOHN, the younger, and ROSSER, SAMUEL EGAN.—“ Improvements in the mode of burning and applying gas for light and heat.” These “improvements relate, “firstly, to the mode of burning and applying gas for lighting. “This is effected by the introduction, in a convenient and suitable “position above the gas burner, of a ventilating bell and tube, “made with a trough or channel, to receive the condensation of “any aqueous vapours arising from the combustion of the gases ; “the said trough or channel being so placed that the aqueous “products can be carried away by a pipe or other known means, “or so placed with regard to the flame of the burner, that the “said aqueous products shall become evaporated, and driven off “through the chimney or ventilating tube, when the gas is “burning.”

Secondly, in “the arrangement of the globes, glasses, and “chimneys of gas burners with ventilating bells, whereby a current of cold air is introduced between the outer surface of the “ventilating bell or glass and the interior of the globe which “encloses the gas burner; and which arrangement will also “insure the passage of a current of air between the external “surface of the gas chimney, and the inner surface of the ventilating glass or bell.”

Thirdly, in “applying gas for heat. This is effected by placing “the gas burner of a stove within or under a tube or casing for “conveying the heat through a chamber surrounded with water “or other fluid.”

[Printed, 3*½*d.]

1853.

A.D. 1853, January 4.—Nº 16.

SHEPARD, EDWARD CLARENCE.—“ Improvements in the manufacture of gas.” These improvements consist of “ a mode or modes of producing gases by the action of currents of electricity upon water having chemical matters dissolved in it, and then combining or mixing the gas or gases thus produced with a gaseous hydro-carbon, and either with or without a portion of atmospheric air, for the purpose of enabling the mixed or combined gases, when burnt, to produce a larger quantity of light or heat.” The patentee prefers to produce the currents of electricity by the machines described in his specifications, “ dated 24th October 1850, and 6th July 1852.” The “ chemical matters ” referred to may consist, in preference, of one part “ sulphuric acid,” and nineteen parts of a saturated solution of oxalic acid, at a temperature of 15° centigrade. The decomposition may be effected in any suitable vessel. The gases so produced may be enriched by passing them through the “ essence of resin, at the temperature of its ebullition,” in preference, or other hydro-carbon. The essence of resin is best applied when used with “ metallic sponges;” these metallic sponges “ are prepared by soaking coke in a well-saturated solution of nickle or cobalt, and heated in covered crucibles.” The mixed gases are caused to pass through a heated vessel containing the metallic sponges and essence of resin, or other hydro-carbon.

[Printed, 8*d.*.]

A.D. 1853, January 13.—Nº 92.

BROWN, WILLIAM.—“ An improved method of treating coal and bituminous substances, and for improvements in the treatment of their volatile products.” Consisting, first, “ in distilling coal or other bituminous matter, in conjunction with steam, at a dull red heat.” The material to be distilled being placed and heated in a suitable retort, is subjected to the action of a current of heated steam. Various volatile products are distilled over, which being redistilled may be, to a certain extent, separated one from the other. An impure “ euphone oil ” comes over first, and *lastly, a thick butyraceous matter, consisting chiefly of “ paraffine.”*

The impure "eupione oil" may be purified by treating it with vitriol and water, and afterwards adding bichromate of potash. The whole is then heated to 212° F. in a convenient vessel, and well stirred; when cool and settled, the oil is decanted and treated with a warm solution of caustic soda. Lastly, the oil is again decanted and distilled, either alone or with water or steam. The heavy oil containing paraffine should be treated with sulphuric acid, and peroxide of manganese, or bichromate of potash; then with soda ley, and distilled, as in the case of the eupione oil. Various kinds of oils are obtained by arresting the distillation at various points. The paraffine will crystallize out of the thicker oils, and may be collected on a filter, and purified by adding one part sulphuric acid to about 20 parts paraffine, heated to about 400° F.; after boiling for some time and allowing the liquid to stand, the charred oil in the form of a black powder will settle; this being separated, the paraffine must be boiled in water, or in a weak solution of soda.

[Printed, 7½d.]

A.D. 1853, January 24.—Nº 174.

KNAB, DAVID CLOVIS.—“ Improvements in the process of, and “ apparatus for distilling certain vegetable and mineral matters, “ and also animal bones and flesh.”

Consisting, first, in distilling such substances at a temperature “ suitable to the nature of the operation, and at a lower degree “ than hitherto practicable.” This may be effected by surrounding the closed vessel or retort in which the substance to be distilled is placed, with an outer vessel or trough, in which is placed a fusible metal, the composition of which should be adjusted, as regards the melting point, to suit the nature of the substance to be distilled. The heat required for distilling any particular material can be easily regulated by observing the temperature of the melted fusible metal thus interposed between the outer vessel and the retort.

[Printed, 7½d.]

A.D. 1853, January 28.—Nº 218.

PRIDEAUX, THOMAS SYMES.—“ Improvements in the manu-“ facture of iron.”

These improvements consists, first, “in distilling coal in suitable “ retorts, as when manufacturing gas for the purposes of illumina-

" nation, and conveying the products to reverberatory furnaces
 " employed in the manufacture of iron, and burning the same
 " with atmospheric air." The reverberatory furnace is supplied
 " from the top of the bridge to the roof," at regular intervals
 " by the mouths of the air and the gas tubes." A suitable supply
 of each is caused to enter the furnace, and the heat arising from
 the ignition is sufficient to work the puddling furnace.

Second, "in preparing coke used in the manufacture of iron;" this may be effected by slackening the red-hot coke with "lime water (instead of water alone), to which has been added either common salt or carbonate of soda, in the proportion of about two per cent. to the weight of coke, using more alkali if the coke is inferior." Other alkalies may be employed, such as those that "are electro-positive or basic towards iron."

[Printed, 3*d.*]

A.D. 1853, February 3.—N° 297.

JOHNSON, JOHN HENRY.—(A communication).—"Improvements in gas burners, and in regulating the combination of gas."

These improvements consist, first, "in the employment of four perforations in place of only two, as commonly used," by which means a more powerful and brilliant light will be given for a certain quantity of gas. Second, "in the use of gas burners with two or more converging jets." Third, "in the use of gas burners with converging jets, in conjunction with a central aperture for the admission of a current of air." Fourth, "in the application and use of regulators fitted either in the interior of the burners themselves, or in the pipes leading thereto." This regulator consists of a small metal plug fitted with a disc of caoutchouc, or other suitable flexible material, and placed in the burner or pipe; if the pressure on the gas becomes excessive the disc will be elevated, and partially close the opening for the flow of gas.

[Printed, 5*d.*]

A.D. 1853, February 4.—N° 307.

PERKINS, JOHN.—"Improvements in the treatment of certain bituminous mineral substances, and in obtaining products therefrom."

This "invention consists in the obtaining of paraffine oil, or an "oil containing paraffine, and paraffine, from bituminous mineral "substances found in the coal formation, and known in their "respective localities under the names of basses, black basses, "bats, blaes, greasy blaes, shining blaes, coal shales, argillo "bitumens, or bituminous argils, bituminous sandstones, and "asphalt coals, (not including bituminous coal), yielding bitu- "minous matters by the application of heat." All or any of these substances may be placed in a suitable retort and distilled at a low red heat. The oil obtained may be redistilled and purified, and the paraffine separated by processes known to effect the desired object.

[Printed, 3½d.]

A.D. 1853, March 1.—N° 513.

FLUDE, CHARLES, and WATERMAN, JAMES.—(Provisional Protection only.)—"Improvements in the application of heat for "producing evaporation, generating steam, and for general heating "purposes, and also in the economical production of combustible "gases for the purposes of illumination."

These improvements consists, first, in "the application of car- "bonic acid vapours derived from the process of fermentation, "and other source, for the purposes of heating when converted "into carbonic oxide," by means of passing them through heated pipes and incandescent carbon.

"And secondly, in the use and application of suitable apparatus "and process for employing a heated mixture of coal gas and "atmospheric air in regulated quantities for heating purposes, "thereby effecting a greater economy than by the modes hitherto "practised."

"And thirdly, in the production of gas for the purposes of "illumination, by a mixture of carbonic oxide with hydrogen or "hydro-carbons." The carbonic oxide may be passed into a heated pipe or chamber supplied with resin, turpentine, naptha, &c., and on to the burners.

[Printed, 2½d.]

A.D. 1853, March 4.—N° 549.

HUNTRY, SAMUEL HAZARD.—(Provisional Protection only.)—" Improvements in controlling and regulating the flow or pressure "of gas."

These "consist of a pressure apparatus in the form either of a small gasometer or hydraulic valve, or a flexible diaphragm chamber, or other adjustable receptacle placed in communication with the gas thoroughfare, the opening into that thoroughfare being at a point behind the regulating valve, or, in other terms, between that valve and the service pipe or the burners. The rising or moveable portion of the pressure chamber is connected to this regulating valve in the gas pipe, so that as the gaseous pressure causes the elevation of the pressure chamber apparatus it closes the regulating valve more or less accordingly."

[Printed, 2*d.*.]

A.D. 1853, March 7.—N° 570.

WATSON, JOSEPH JOHN WILLIAM.—“Improvements in illuminating apparatus, and in the production of light.”

Consisting in the production of light by causing the mixed gases, oxygen and hydrogen, as they are obtained from the decomposition of water by galvanic or other agency, to impinge while in a state of ignition against certain non-combustible or nearly non-combustible substances, such as “lime, the earths, graphite, spongy platina, &c.” The apparatus employed consists of a vessel containing dilute sulphuric acid, in which are placed two insulated plates of platina connected by wires to the poles of a galvanic battery. The evolved gases pass through a safety tube filled with lengths of wires, and escape by a stop-cock and nozzle. The gases when ignited are caused to impinge against a cylinder or cone made of non-combustible material, to which should be imparted a revolving motion by means of clockwork, as well as an up and down motion to ensure that a different surface may be continually exposed to the flame. Fine platina wire may be coiled round the heated cylinder. Coloured effects may be obtained by steeping such cylinders in nitrate of strontia or other substances, and a suitable reflector may be applied to reflect the light.

[Printed, 5*d.*.]

A.D. 1853, March 9.—N° 592.

KIMBERLEY, JAMES.—“A new or improved gas stove.”

“Consists, firstly,” in “constructing gas stoves having two or more tubes underneath,” and “in each of which a gas flame or flames is situated, the said tubes opening at their bottoms to

" the atmosphere, and at the tops into a common chamber." "Secondly," "in the use of a perforated diaphragm in the chamber of gas stoves, for the purpose of abstracting the heat from the heated air and products of combustion passing through the said chamber.

[Printed, 5*d.*]

A.D. 1853, March 12.—N^o 623.

HEATHER, JOHN FRY.—(Provisional Protection only.)—"An equitable gas weighing meter."

This invention consists, first, in "taking into account the pressure of the gas by means of" a "travelling platform and cone; and secondly, the means of taking into account the temperature by the employment of an air spring, and the gas reservoir surrounding it, so as to arrive at the true weight of gas passing through the meter under all circumstances."

[Printed, 4*d.*]

A.D. 1853, March 12.—N^o 627.

MICHIELS, GEORGE.—"Improvements in obtaining oxygen for manufacturing purposes."

"This invention has for its object the employment of the known chemical fact, that the oxide of baryta at one temperature will absorb oxygen, and at another temperature will evolve oxygen, in a manner to obtain oxygen for various manufacturing purposes. And the invention consists of causing a retort containing oxide of baryta to be heated to and kept at a low red heat when atmospheric air is being passed amongst the oxide of baryta, and then to exclude the atmosphere, and to open a passage to a gasometer or receiver, raising the heat of the retort to cherry red, and this is done by employing gas with atmospheric air as a means of heating the retort [or by other modes of heating], by which the desired alternations of heat may be readily obtained; and in order to get the atmospheric air to pass into the retort, a fan or other mechanical apparatus is used."

[Printed, 5*d.*]

A.D. 1853, March 12.—N^o 630.

WHITTY, ROBERT CHRISTOPHER.—"Improvements in the manufacture of gas."

" This invention consists of combining vegetable oils with " vegetable matter," [such as spent hops, dry peat, or dry and fine sawdust, and in some cases a little lime may be added,] " and " pressing the compound into moulds to obtain blocks or bricks, " which being dried, are introduced into a retort, and the gas is " distilled therefrom. By preference, a retort divided horizontally " is used. The blocks or bricks are introduced into the lower com- " partment of the retort, and the products pass through a perfo- " rated block or partition formed or placed within the upper com- " partment of the retort, the heat of which prevents any of the " products passing without being converted into gas."

[Printed, 2*d.*.]

A.D. 1853, March 24.—N^o 717.

WEBSTER, HENRY, and STONES, EDWARD DAWSON.—" Im- " provements in the construction of gas stoves."

The object of this invention is to obtain a large heating surface in gas stoves, and also to secure the perfect combustion of the gas. In constructing a "heating stove," the air to be heated "passes " through a rectangular, elliptical, or irregular shaped flue or " channel to a horizontal air box, in which it is heated, hence it " passes through a rectangular, elliptical, or irregular shaped tube " or pipe of zigzag or other form, and flows into the chamber or " apartment through perforations in the cover." The gas is burned in the combustion chamber, and the air required for combustion is drawn through perforations in the external case and " directed upon the gas issuing from the jet or horizontal perfo- " rated gas pipe." In the case of the "cooking stove," the burned or vitiated air is conducted up between the outer and inner cases, and escapes by a pipe; a supply of fresh air is admitted into the "air box," which afterwards enters the body of the stove, pro- vided with three shelves to support the articles to be cooked. A pipe is placed at the top of the stove to conduct the steam away, and the stove is supplied with a suitable door.

[Printed, 5*d.*.]

A.D. 1853, March 31.—N^o 773.

HANSON, GEORGE, and CHADWICK, DAVID.—" Improve- " ments in apparatus for measuring gas, water, and other fluids,

" which improvements are also applicable for obtaining motive power."

These improvements consist "in the use of a flexible tube or bag, into one end of which gas, water, or other fluid to be measured enters from the main or other source, and there exerting its force against a roller or rollers placed upon the tube or bag causes the said roller or rollers to revolve and discharge from the other end thereof the fluid which had previously entered. Each revolution, therefore, will represent a certain amount of fluid which has passed the apparatus through, and it may be registered by means of any ordinary count connected to the roller or rollers. If used for obtaining motive power, motion may be communicated in the ordinary manner."

[Printed, 5½d.]

A.D. 1853, April 4.—Nº 805.

STEIGEWALD, FRANCIS.—(Provisional Protection only.)—
" Improvements in heating furnaces."

" This invention consists of a mode of constructing apparatus for generating gas and obtaining heated air at the same time, and conducting them to the furnace which is to be heated thereby. A close furnace or chamber is constructed, having fire bars or gratings at the bottom, under which is constructed a chamber, into which the air first comes, and is heated, and there is an outlet pipe by which the heated air passes to a furnace to be heated. At the upper part of the furnace or chamber which is to contain the coal a feeding place is formed, which is closed by a valve, and a pipe leads from the upper part of the furnace or chamber to the furnace which is to be heated, so that the gas and heated air come together, and by ignition heat such furnace."

[Printed, 2½d.]

A.D. 1853, April 5.—Nº 820.

THOMAS, JOHN.—" Improvements in apparatus for the manufacture of gas and coke."

To effect these improvements "the retorts are arranged in a vertical position in three benches, each bench made up of twelve retorts, in two rows of six in a row. The furnaces are at the bottom of the retorts, and extend throughout the whole width of the benches, so as to ensure a good and regular heating. In order to obtain the greatest amount of economy derivable from

" this arrangement, the two external benches of retorts are provided with a furnace to each ; and the bench between them is without a furnace, but is heated by the spare heat from the bench on either side of it, so that a bed of these settings is composed of a bench with a furnace, and one without one alternately. These retorts are charged at the top by means of hoppers, and they are discharged at the bottom, the coke being guided into a proper receptacle by means of a screen, which at the same time frees it from dust. The retorts may be divided perpendicularly by a diaphragm of perforated sheet iron, and charged on each side alternately when caking coal is used. But the use of a perforated sheet-iron tube or pipe fixed in the centre of the retort is preferred, so as to leave an annular space to be occupied by the coal. The gas will readily escape into the perforated pipe, whilst the slight pressure to which the coke is subjected will produce an article much more dense than that produced by any of the methods at present in use."

[Printed, 10*d.*.]

A.D. 1853, April 16.—N^o 924.

SOUCHON, JEAN MARIE.—" Improvements in the manufacture and purification of gas for illumination, and certain products therefrom, and in apparatus for that purpose."

Consisting, first, "in increasing the quantity of gas and obtaining cyanides, by passing the products of the distillation of coal or other suitable substance through a heated retort containing alkali or alkaline salts."

Secondly, "in obtaining illuminating gas and cyanides, by injecting a mixture of tar and ammoniacal liquor into a heated retort, and conveying the vapours or gases so produced through a heated retort containing alkali or alkaline salts."

" From six to ten gas retorts may be connected to one cyanide retort." The cyanide retort should contain a suitable alkali or alkaline salt, or some substance like coke, &c., impregnated with these substances, and be provided with agitators to stir up the alkaline mass while heated to a red heat.

Thirdly, in purifying gas for illumination, by passing it through a series of revolving purifiers containing [suitable] purifying liquids, and pieces of wood or other solid matters, for the purpose of increasing the wet surface to act on the gas. A trough is

attached to the inner side of the revolving purifier, which lifts the liquor and pours it over the enclosed pieces of wood.

"Fourthly, "in constructing doors of retorts with catches for fixing them, and hinges with elongated holes or joints for supporting them." The door is kept tight to the mouth of the retort by "four catches," which turn in their sockets, acting on four inclined planes" cast on the outer side of the door. The "elongated holes" give considerable play to the hinge joint in opening and shutting the retort door.

[Printed, 6*d.*]

A.D. 1853, April 18.—N° 929.

STEPHENS, WILLIAM WALKER.—"The application of retorts in gas ovens or other ovens, and of gas oven or other ovens which are constructed as retorts to the process of improving iron and converting iron into steel."

"The iron being put into and taken out of the retorts or ovens while they are at a high heat, all the time is saved which is taken by the present method in the lengthsome process of gradually heating and of gradually cooling the metal, a time averaging many days. This new method offers further the advantage of subjecting the iron to a nicer chemical action than in the common method; the retorts or ovens being more conveniently available for chemical operation than the present cumbersome structures, and possessing greater facility of treating the metal in the different stages of the process, whether of partially or wholly converting it into steel, according to the precise quality of manufacture desired. In the case of gas retorts, or of gas ovens constructed as retorts, it is intended to use such retorts or ovens as are at the time unemployed in the making of gas; and another advantage of the invention consists in the employing, to purposes of great public utility, machinery that would otherwise be quite unproductive."

[Printed, 2*d.*]

A.D. 1853, April 27.—N° 1008.

LANGLOIS, BENOIST MARIE ADOLPHE.—(Partly a communication.)—(Provisional Protection only.)—"Improvements in instruments to be applied to the chimneys of gas burners."

" This apparatus consists of a disc or ring of metal having an opening in the centre, which is surrounded by a circle of small holes. It is so constructed as to enter a short distance into the chimney, and has a flange at its upper part which rests at the top of the chimney, so as to retain the apparatus in its place. The object of the arrangement is to secure the perfect combustion of the gas."

[Printed, 2½d.]

A.D. 1853, May 7.—Nº 1130.

BOGGETT, WILLIAM, and PETTIT, GEORGE BROOKS.—" Improvements in apparatus for heating by gas."

" This invention has for its object the construction of apparatus for burning gas in combination with atmospheric air in a more efficacious manner than heretofore, and whereby larger quantities of gas may be burned without loss or escape, such apparatuses of suitable configuration " are covered on the top with fine wire gauze or perforated metal, &c., in the manner generally adopted for burning air and gas. When made of a cylindrical shape, several cylinders " are employed " (in place of one, as formerly), arranged concentrically, and constituting separate chambers, which being of unequal depth, allow the gas to flow from one into the other. The gas is first admitted into the shallowest chamber and burns on the top of that chamber only; on a further increase, however, it flows into the next, and so on to the others in succession."

[Printed, 5½d.]

A.D. 1853, May 12.—Nº 1173.

PARKES, JAMES.—(Provisional Protection only.)—" A new or improved stop cock for regulating the flow of gases."

This invention consists of "a stop-cock or tap to be placed between the ordinary stop-cock of a gas burner and the said gas burner. The said stop-cock differs from the ordinary stop-cock in having two holes made in the plug thereof, one of the said holes being like that in the ordinary stop-cock, and the other at right angles thereto, the last named hole being smaller than the first-named. The object " being "to permit the gas to be turned off when it is not wanted, but to leave as much flowing as will keep the flame burning, and permit the light to be instantly restored."

[Printed, 2½d.]

A.D. 1853, May 14.—N^o 1197.

WARNER, WILLIAM JOHN.—“Improvements in dry gas ‘meters’”

“These improvements consist, first, in the application of two flexible diaphragms on one cylinder, together with a partition and flange, and the forming four chambers by soldering or otherwise fixing the whole into a case at the flange.”

Secondly, in “the application of universal joints to meters for converting the vertical rotatory motion of the cranks into a reciprocating motion for the slide valve covers.”

Thirdly, in “the moving of slide valve covers by segments of spur wheels geared into racks at the base of the covers.”

Fourthly, in “making the regulating cranks or tangent screws and other parts compensating, by forming them of proportionate lengths of two metals which expand unequally, say brass and iron, in order that the several parts may work correctly, notwithstanding they may be subjected to varying temperatures.”

Fifthly, in “the actuating of the slide valve covers by horizontal cranks geared to the shafts of the regulating cranks by bevel wheels, and attached to the valve covers by connecting rods working on pins at two sides of the base of each cover. The pins are fixed at points on a line which bisects the base.”

[Printed, 6*d.*]

A.D. 1853, May 19.—N^o 1237.

WRIGHT, SAMUEL.—“Making a gas, steam, air, or liquid safety tap.”

This invention consists in constructing taps or valves in such a manner “that the valve or plug opens against the pressure.” The opening of the valve may be effected by means of a floating ball or otherwise. By this invention the pressure behind the valve assists in keeping it close to its seating.

Second, in opening or lifting the valve off its seating by means of a “hand lever.” The aperture required to pass through the end of the lever beyond the fulcrum is rendered gas or liquid-tight by means of a “thick washer of vulcanized india-rubber,” through which the stem of the lever passes, and which is pressed by a suitable collar.

[Printed, 5*d.*]

A.D. 1853, May 20.—N° 1251.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(A communication.)—“ Improvements in rotary engines to be driven by steam, “ or any vapour, fluid, or gas, and in boilers or generators to be “ used in generating steam or gas for driving the aforesaid or “ other engines, or for other purposes.”

These improvements relate chiefly to the rotary engine; first, as “ to the supporting of the outer cylinder.”

Second, “ as to forcing out the sliders,”

Third, as to forming tight working joints.

And fourth, relates “ to the employment, for the heating parts “ of boilers or other vessels for generating steam or gas by heat, “ of metal in the form of tubes or sheets, or in any form with the “ heating surface smooth or even, as commonly used, but with the “ radiating surface corrugated, abrased, chased, impressed, in- “ dented, raised, or otherwise made uneven, for the purpose of “ increasing the extent of the said radiating surface proportionally “ to that of the heating surface.”

[Printed, 11*d.*.]

A.D. 1853, May 21.—N° 1258.

CHISHOLM, WILLIAM.—“ Improvements in the purification of “ coal gas for the purposes of illuminating and heating, and “ obtaining, by the ingredients used therefor, manures, salts of “ ammonia, and sulphur.”

These improvements consist, firstly, “ in the purification of coal “ gas by peats containing substances with which they are found “ associated in nature, or peats to which, when deficient in such “ substances, they are artificially supplied.” These substances may be “ peroxide of iron,” “ sulphate of iron,” “ sulphate of “ lime,” “ hydrate of lime,” “ chloride of sodium,” “ oxides or “ sulphates of manganese and copper,” added to the peat in suitable quantities.

“ Secondly, in obtaining salts of ammonia from peats which “ have been so used for the purification of gas, and from the “ ordinary ammoniacal liquor of gas-works by the use of similar “ peats.” The salts of ammonia are washed out from peats so impregnated, and treated in the usual manner.

“ Thirdly, in the production of a manure by mixing certain “ substances with some of the peats so used for the purification

" of gas." The patentee makes use of the following composition in preference,—"superphosphate of lime, 24 parts; bisulphate of potassa, 16; chloride of sodium, 7; sulphate of magnesia, 8; " peat, 45 parts;" well mixed together and placed in the "ammonia purifier."

" Fourthly, in the obtaining of sulphur as a residuum in a certain part of the process." When the "peroxide of iron peat" has become surcharged with sulphur deposit, the sulphur may be readily obtained by sublimation.

[Printed, 4*d.*.]

A.D. 1853, June 3.—N^o 1363.

GOSSART, FERDINAND LOUIS.—"A system of permanent circulation of caloric intended to produce and overheat steam, gas, and liquids."

The system referred to above consists of an apparatus "composed of three essential parts: a heating pipe, receiving the waste heat by the condensing tube, through which comes with a certain pressure the liquid that is to be converted into steam or the gas to be heated;" "secondly, one or several pipes, cylinders, boilers, or generating tubes or heaters receiving directly or indirectly the action of the fire;" "thirdly, a condensing tube, in which the steam or gas is cooled by communicating its heat or caloric to the heating pipe." The principles upon which this invention is based are, first, to multiply in the interior the heating or condensing surfaces, by the use of small conducting particles; secondly, to establish a continuous circulation of the caloric by using, either by double pipes or by conducting liquids serving as intermediate agents, the heat that the steam or gas retains when it arrives in the condensing pipe for the heating of the liquid, steam, or gas which passes through the heating pipe to arrive into that part of the apparatus where it receives directly or indirectly the action of the fire."

[Printed, 10*d.*.]

A.D. 1853, June 22.—N^o 1525.

TOPHAM, CHARLES.—"Improvements in apparatus for measuring, liquids, gases, and other elastic fluids, and for regu-

" lating the flow thereof, which apparatus may also be applied to
" the obtaining of motive power."

This invention consists "in measuring and regulating the flow
" of liquids, gases, and other elastic fluids, by means of a box or
" case fitted with a stop or stops, in each of which is a passage
" open for the outlet of water or other liquid or fluid employed
" through a slide which is caused to reciprocate, and open or
" close the passage, as may be required. Or a semi-rotary valve
" may be employed, having four ways, two for the inlet, and
" two for the outlet of the water to be passed through the meter.
" In the centre of the case I mount a piston, which is caused to
" oscillate upon trunnions by the force of the water to be
" measured, entering in at one side through the slides or valves,
" and thereby fills the case. When the slide or valves become
" reversed, water is caused to enter at the opposite side of the
" piston, and in so doing it forces out the water on the other side
" through the exhaust port until the whole of the water has been
" thus passed through the case and measured; the number of oscil-
" lations of the piston being indicated by an index or dial in front
" of the apparatus. I construct my valve in connection with the
" source of supply, so as to regulate the flow of liquids or fluids
" to the meter in such manner that the increase of pressure of
" the in-flowing liquid or fluid shall act upon the valve, and
" thereby cause it to gradually narrow the orifices for the inlet to
" the meter. Instead, also, of the piston in the apparatus being
" employed only to register the quantity of liquid or fluid passed
" through it, it may be made to communicate motion to a shaft
" for purposes of power."

[Printed, 6*d.*.]

A.D. 1853, July 1.—N° 1587.

SHEPARD, EDWARD CLARENCE.—(A communication.)—" Im-
" provements in magneto-electric apparatus, suitable for the pro-
" duction of motive power, of heat, and of light."

" This invention has for its object improvements in the appa-
" ratus described in the specification of a former patent granted to
" me on the sixth day of July, One thousand eight hundred and
" fifty-two; and the improvements consist of peculiar means and
" combination of apparatus for coupling up the metallic circuits
" [of the several series of coils], by which induced currents of

“ electricity are conducted to and caused to decompose water, and
“ thus to obtain with greater advantage than heretofore, gases for
“ the purposes of producing motive power, light, and heat.”—(See
Abridgments on Electricity.)

[Printed, 1s. 10*½*d.]

A.D. 1853, July 2.—N^o 1591.

SHEPARD, EDWARD CLARENCE.—(A communication.)—“ Im-
“ provements in the manufacture of gas.”

“ This invention consists of decomposing water combined with
“ the matters herein-after described, by electric currents obtained
“ by any of the means heretofore used for that purpose ; but I
“ prefer to employ a magneto-electric machine, such as is described
“ in the specification filed in pursuance of the proviso in letters
“ patent granted to me, and dated the first day of July, One
“ thousand eight hundred and fifty-three. The water to be em-
“ ployed, according to this invention, I combine with concentrated
“ sulphuric acid, as pure as may be, marking about 66° of Beaumé,
“ which I saturate with liquid ammonia, also pure ; and of this
“ compound I mix one part by measure with five parts of water ;
“ I do not, however, confine myself to these proportions ; and I
“ cause the water thus combined or mixed with the other matters
“ to be decomposed by electric currents ; and I employ the gases
“ thus obtained in the manner described in the specification of my
“ former patent of the fourth day of January, One thousand
“ eight hundred and fifty-three.”

[Printed, 2*½*d.]

A.D. 1853, July 7.—N^o 1621.

CROLL, ALEXANDER ANGUS.—“ Improvements in apparatus
“ used in the manufacture of gas.”

“ These improvements relate, first, to modes of arranging the
“ retorts and the retort chambers, by causing the heat from the
“ furnace used to pass directly into a chamber containing clay
“ retorts, and thence through openings in the side walls of such
“ chamber into a side chamber or side chambers divided vertically
“ by open shelves on which other retorts rest, and through the
“ spaces between which shelves the heat passes to the various
“ retorts in such side chambers.”

“ Secondly, relates to setting the furnace used to heat retorts em-
“ ployed in generating gas high up in the retort chambers or ovens,

" by which other retorts may be placed immediately under such furnace, the heat first acting upon ordinary clay retorts in the usual manner, thence descending to heat other clay retorts on each side and below the level of such furnace, and thence to iron or thin clay retorts placed immediately under the furnace."

" Thirdly, relates to a mode of setting retorts in chambers or ovens, so that the heat first acts direct upon iron retorts in one chamber or oven, and then passes freely and rapidly away by channels to another chamber below containing other retorts."

" And, fourthly, relates to the use of balls, or other weighted valves, to the different passages from the retorts to the main, by which, whilst a fresh charge is being placed in any retort, the passage from such retort to the main may for the time be closed, in substitution of water sealing, or the hydraulic main."

[Printed, 1s. 4½d.]

A.D. 1853, July 12.—Nº 1654.

COWAN, PATRICK.—" Improvements in gas fittings."—(This invention did not proceed to the Great Seal.)

" The object of " this " invention is to check " the " evaporation " from hydraulic slides at present used in gas lamps; and " this I propose doing by converting the open cup at top into a " fountain to supply the tubes; this I do by covering in the top, " and screwing into it a funnel or dip tube, in which the suspending rod shall work."

[Printed, 2½d.]

A.D. 1853, July 20.—Nº 1716.

POOLE, MOSES.—(A communication.)—" Improvements in gas regulators."

This invention consists, first, in regulating the flow of gas from the main, and also its pressure in the branches, by means of a valve, which will itself not be affected by the varying pressure in the main. The gas main communicates with a small chamber, in the top of which is an aperture through which the gas flows into another chamber, thence to the branches. The width of this opening or aperture is regulated by a valve, which is formed after the manner of a cylinder, with a fixed piston in it, and being suspended by a rod from an inverted dome or hood floated in mercury *it is elevated or depressed, and the edges of the cylinder brought*

more or less near the opening or aperture, and the gas thereby less or more cut off, according to the pressure of the gas acting on the dome. The lower edges of the cylinder dip into mercury, which prevents the varying pressure of the gas in the mains from disturbing the action of the valve itself.

Second, consists in "counteracting the disturbing effects produced by the varying pressure of the gas in the main upon the common valves of gas regulators heretofore used, called poppet valves, by means of graduated weights or graduated springs, or other similar graduated contrivances, such as partially submerged wedge-shaped floats, which, being more or less withdrawn from the liquid in which they are immersed, act as graduated weights."

[Printed, 6*d.*.]

A.D. 1853, July 26.—N^o 1763.

WARDER, ALFRED WILLIAM.—"Improvements in gas stoves."

"This invention consists of forming a gas stove of earthenware or other suitable material, and it is preferred to be of a cylindrical exterior form. The interior chamber is divided into three compartments by means of two partitions; the centre compartment is open from bottom to top, by which the external air may pass from below upward, become heated, and then pass into a room; the two other compartments are connected together at the upper part of the apparatus by tubular passages. Gas is supplied [through a perforated plate of porcelain or other suitable material] to one of the compartments, and air is allowed to flow in freely, which igniting, the heat and products pass through [by the tubular passages] into the third compartment, and away by a suitable passage into a chimney or flue."

[Printed, 4*d.*.]

A.D. 1853, August 1.—N^o 1798.

HOLME, RICHARD.—"Improvements in the manufacture of gas."

"This invention consists of constructing retorts with enlargements or chambers at the upper parts, so that the gas as it is evolved, in place of passing away out of the retorts by the rising pipes as heretofore, is received into the upper parts or gas chambers of the retorts where there is constantly a quantity of

“ gas, and it is from these chambers the gas is conveyed to be purified, and then to the gasometer. The retorts are each made either with one or two mouth-pieces, and the bottom of the retort falls towards the middle or most heated part, so that the fluid flows towards that part of the retort, and is converted into gas ; and when the retorts are used for making gas from oils or fluids, they are supplied with such fluids by means of a tube rising into a cylinder closed at bottom, and over such tube there is an inverted vessel, by which there is at all times a fluid joint formed, opposing the passage of gas through the hole in the tube by which the fluid passes into the retort.”

[Printed, 6½d.]

A.D. 1853, August 5.—N^o 1831.

SMITH, WILLIAM, and PHILLIPS, THOMAS.—“ An improvement in gas stoves.”

“ This invention consists of a gas stove for heating rooms, buildings, &c., by which is obtained the appearance and effect of an ordinary coal fire from jets of gas radiating upon lumps of glass or lumps of glass and metal ore laid upon a piece of plate glass in the bottom of the stove. The reflection from these lumps is shown through plates of coloured glass arranged between the bars in front of the stove, and thus presents the appearance of hot or burning coals in an ordinary coal fire, while the heating effect is given to [is obtained from] the products of combustion by causing a circulation of the atmosphere of the room or building through air boxes in the interior of the stove. These boxes are fitted together so as to exclude the products of combustion, and are supplied with atmospheric air from under the plinth of the stove at the level of the floor, or nearly so, by means of pipes, the lower ends of which are open. The air when heated passes into the room or building through apertures provided for the purpose in front of the stove.”

[Printed, 6½d.]

A.D. 1853, August 6.—N^o 1839.

MARTIN, JOHN.—“ An improved shade for gas burners and lamps.”

This “invention consists in constructing shades in two parts, or of two distinct and separate pieces of material, the upper

" part being formed of ground glass, opal, or other semi-transparent substance or material, and the lower portion of glass, which should be perfectly transparent. And" in "employing this lower portion of the shade for supporting the upper part thereof, and thus dispensing with the necessity for employing a large metal holder for supporting the shade, as hitherto practised, by which means the rays of light will be less obstructed."

[Printed, 4*d.*]

A.D. 1853, August 8.—N^o 1849.

POOLE, MOSES.—(A communication.)—"Improvements in regulating the flow and pressure of gas and other fluids."

This invention consists in "combining the use of two or more governors or regulators, which acting independently and in succession, more completely accomplish the desired object than has heretofore been done. The description of governors or regulators which are preferred for this purpose are those where inverted vessels are used, working in quicksilver or other fluid, and connected to the induction valves. By" this "means the gas, supposing it to come to the first governor or regulator at a pressure exceeding that at which it is desired to deliver it at, will act on the governor, and tend to close the valve, and hereby restrict the passage of the gas into the first chamber; the gas then passes from the first chamber or governor into the second, and if it be still at an excessive pressure it will be again retarded in its passage, and so on, according to the number of governors or regulators combined and caused to act in succession."

[Printed, 5*d.*]

A.D. 1853, August 18.—N^o 1938.

DE BERGEVIN, AUGUSTE MATHIEU MAURICE.—"Improvements in the manufacture of coke, and in the apparatus connected therewith, and in treating the products obtained therefrom."—(A communication from Monsieur Guillaume Louis Edouard Buran.)

These improvements relate, first, "to the arrangement and construction of the ovens." There should be two ovens built in juxta-position, capable of holding each about three tons of coal; and each oven should have two communications, one with the chimney, and the other with the condenser and gas-holder, either or both of which may be opened or shut at pleasure. These

ovens may be charged alternately, and one charge may last forty hours. The draft from one oven may be caused to pass under the "sole" of the other. The gaseous, volatile, and bituminous matters from the coal, are obtained during the first four hours. Turf, or other vegetable, ligneous, and bituminous matters may be treated in a similar manner.

Secondly, to an apparatus for causing "an artificial draft in "the ovens." This is effected by a double-acting pump, which draws the gaseous products from the oven and forces them forward to the condenser. The piston of this pump is an inverted bell working in a water joint; other modes of drawing the gases from the ovens may be adopted.

Thirdly, "the combining of such said ovens and artificial draft "apparatus with a condenser and purifiers, so as to constitute an "entire apparatus for the manufacture of coke, and for the "purpose of securing and rendering useful certain products "which heretofore have been dissipated and lost."

Fourthly, "in the manufacture of coke from coals, the introducing of steam into and amongst the mass under process "of carbonization, for the purpose of divesting it of the sulphur- "retted hydrogen contained therein." The steam may be admitted about two hours before the process of carbonization is completed.

Fifthly, relates to stills for distilling, and to the manner of distilling the tar condensed during the previous process. The Patentee regulates the heat of the furnace of the still in such a manner that volatile oils possessing different qualities will be obtained in accordance with the degree of heat employed.

Sixthly, the acid used in the purification of gas, being added to the ammoniacal liquors obtained, the solution of the salt so formed may be evaporated in a pan or cistern, the bottom of which is inclined and also corrugated; weak liquors being introduced at the higher end of the cistern, they flow over from one corrugation to the next, and become concentrated before they arrive at the lower end.

[Printed, 2s. 2½d.]

A.D. 1853, August 23.—Nº 1964.

MANN, WILLIAM.—"Improvements in the purification of gas, "and in the treatment of the material used in such purification."

This invention consists, firstly, in "the purifying of gas for the purposes of illumination and heat, from carbonic acid by ammonia, in combination with the water which is mixed with the lime to prepare it for dry lime purifying." Atmospheric air, or other suitable vehicle, charged with ammonia by any suitable means, is caused to pass through a fresh charge of lime placed in the purifier. The water combined with the lime absorbs the required amount of ammonia, and when impure gas is afterwards caused to pass through this mixture, the ammonia will combine with the carbonic acid of the impure gas, and leave the lime wholly at liberty to withdraw the sulphuretted hydrogen.

Secondly, in "the means of ventilating or deodorizing the foul lime, so that no noxious vapours can escape into the atmosphere." When the lime in the purifier has become foul, the Patentee proposes to pass through it either "carbonic acid" alone, or "carbonic acid with air," or, in preference, the "products of combustion of coke or charcoal;" and to cause this "ventilating medium to proceed forward and through any of the materials known to take up sulphuretted hydrogen, and which will not give it off again when exposed to the air." A small "scrubber" may be used to detain the ammonia, which the ventilating medium will carry forward from the lime. By this means the lime will be ventilated and deodorized, and no noxious effluvia from it will escape into the atmosphere. If "oxide of iron" be used to intercept the sulphuretted hydrogen, and some portion of air be in the ventilating medium, it will thereby, to a certain extent, be restored or revivified.

Thirdly, consists in claiming the use "of a deodorizing or ventilating medium which cannot form an explosive mixture with coal gas."

[Printed, 3*d*.]

A.D. 1853, August 24.—N° 1972.

HELY, ALFRED AUGUSTUS DE REGINALD.—"Improvements applicable to shades or chimneys for lamps, gas, and other burners." These consist "in cementing or attaching to the concave or convex surfaces of glass or other transparent or translucent shades or chimneys for lamps, gas and other burners, suitable plane, convex, or concave pieces of glass, or other transparent or translucent material, exhibiting one or more

" colours, and forming of themselves, or having produced upon them, any desired letters, figures, devices, or designs. In inserting in apertures previously formed in the surfaces of such shades or chimneys, corresponding plane, convex, or concave pieces of such coloured glass, or other transparent or translucent material, forming of themselves, or having produced upon them, such desired letters, figures, devices, or designs. In screening such shades or chimneys by means of such pieces of glass, or other transparent or translucent material, suspended or supported before them."

[Printed, 5*d.*.]

A.D. 1853, August 27.—N^o 1993.

TAYLOR, SAMUEL.—" Improvements in apparatus for generating and applying carbonic acid gas."

" This invention consists in so arranging or combining apparatus that the pressure of the carbonic acid gas for the time being in the apparatus regulates the further evolution of that gas by admitting, retarding, or preventing the combining of the acid with the matters from which the gas is evolved." This apparatus is for the purpose of securing a self-acting mode of supplying carbonic acid. The reservoir of acid is so placed above the chamber containing the marble required, that it overflows, and the acid runs down on the marble whenever the pressure of the carbonic acid is reduced below a certain point.

[Printed, 5*d.*.]

A.D. 1853, August 30.—N^o 2010.

CUNDY, JOSEPH.—" Improvements in gas stoves." The nature of "this invention consists" in "constructing the internal chamber of a gas stove of fire-clay or earthenware. The air which is to be heated is caused to pass into the interior of such chamber, and to become heated therein, and then to pass out [into the apartment] at the upper or other convenient parts." Such chamber is placed within a double or divided chamber of metal. The earthenware chamber is contracted at its lower end, and the heat of the gas burner "is caused to act" on such end, and heats it; the heat and products of combustion rise up outside of the earthenware chamber, which is by preference, made with channels to divide the heat and products equally

" over the outer surface, and they pass away by a chimney to the
" outer air. In order to prevent the outer metal casing becoming
" too highly heated, and at the same time to withdraw air from
" the apartment, room, or place in which the stove is located,
" there are openings so allow the air to pass in between the outer
" and inner metal casings, and thence by the smoke flue to the
" outer air."

[Printed, 4*d.*.]

A.D. 1853, September 9.—Nº 2086.

NEWTON, ALFRED VINCENT.—(A communication.)—“An improved manufacture of gas burner and gas regulator.”

The first object of this invention is to equalize the pressure of the gas when supplied to the consumer. To effect this, the burner (made of Britannia metal in preference) is formed “of two tubular portions set one within the other. The outer one carries at its upper end the jet or tip through which the gas issues to be consumed, and the lower [inner] tubular portion forms a chamber for receiving the regulating apparatus.” The regulating apparatus consists of a series of small metallic caps, each provided with a central orifice, and placed within the inner tube. Between each cap is placed a perforated disc, supported on conical pins, which, when the pressure is excessive, are carried up in succession against the cap above, and partially close the thoroughfare for the gas; the orifices in the discs being less than those in the caps. Secondly, consists in forming the extreme tip of the burner “by rolling pure tin to an uniform thickness, and cutting it into small round discs of the requisite size. These discs are compressed in dies to the required shape, and are then brought under the action of a punching apparatus, which is employed in place of the ordinary drill to pierce the holes in the tip of the burner.”

[Printed, 5*d.*.]

A.D. 1853, September 13.—Nº 2123.

POOLE, MOSES.—(A communication.)—“Improvements in apparatus and means for removing matters or heat from currents of air, gasses, or vapours, or from liquids, and for communicating matters or heat to the same.”

“This invention consists in removing foreign matters and heat from, and communicating foreign matters and heat to, currents

" of air, gases, and vapours and liquids, by means of sheets of cloth, or wire cloth, or wires, or other similar fibrous or porous material, through the interstices of which currents of air, gases, or vapours or liquids can easily pass, the same being kept constantly wet or washed, or heated or cooled, by any suitable means, such as the revolution of the sheets of cloth, or other porous material, while partly immersed in a reservoir or vessel containing water or other hot or cold liquid, the currents of air, &c. passing through the portion of the revolving sheets of cloth or other material which is not immersed."

The applications of this invention are numerous: for example, it may be applied to railway or other carriages, to intercept dust, &c.; ship's cabins, &c. Various chemical liquids may be used instead of water, whereby the air passing through the cloth or wire cloth may be purified, cooled, heated, damped, &c. Air may be medicated; gas will be deprived of its ammonia, or carburetted with naptha or other liquid rich in carbon, &c.

[Printed, 5*d.*.]

A.D. 1853, September 13.—N^o 2124.

LAMING, RICHARD.—“ An improved process for purifying “ gas.”

This process consists “in the purification of gas by saturating its carbonic acid with ammonia, either alone or combined with hydro-sulphuric acid, or even combined with carbonic acid in less quantity than it can absorb, and afterwards removing the resulting carbonate of ammonia, in conjunction with the further purification of the gas, from free hydro-sulphuric acid, by any effective oxide of iron.” The ammonia or hydro-sulphate required for the first operation may be introduced in a gaseous state into the unpurified coal gas itself, or, when scrubbers are used, it may be introduced into them in solution. The gas so far purified is then caused to pass through “any moist oxide of iron, or mixture of oxide of iron, artificial or native,” possessing the requisite properties which will remove the hydro-sulphuric acid, (see the Patentee’s Specification, dated A.D. 1847, November 4th). There may be interposed between the “washing operation and the purification by oxide of iron, a second set of scrubbers to remove any ammonia which may have been added in excess in the first operation;” or, instead of this intermediate scrubbing operation, substances may be mixed with the oxide of iron capable of com-

bining with both the elements of hydro-sulphate of ammonia; and in preference, the sulphate or muriate of iron or manganese may be used for this purpose.

[Printed, 3*d.*.]

A.D. 1853, September 15.—N^o 2141.

EDWARDS, ELIEZER.—“A new or improved gas stove.”

These consist in “constructing a gas stove, in which the air “vitiated by combustion is conveyed from the apartment in which “the stove is situated by a pipe or flue, passing under the floor of “the said apartment, the heated air and products of combustion “rise up,” an “annular space between” two “cylinders in con- “sequence of the expansion and rarification of the same, and “enter a chamber” above, “and descend through pipes into a “chamber” below, “and finally escape by a pipe under the floor “of the room, to a chimney, flue, or the external air. During its “passage through the chambers and pipes, the heated air and “products of combustion parts with its heat, more or less effec- “tually, to the material of which the said chambers and pipes are “made, and its density is thereby so far increased that it no “longer counterbalances the shorter ascending hot current be- “tween the cylinders, which latter current maintains sufficient “ascending power to determine a rapid circulation. The room in “which the stove is situated is heated by the heat radiated from “the said stove, as well as by the air heated by contact with the “interior of the stove, and the air which passes up the interior “of the stove and the air which passes up the interior of the “inner tube.

[Printed, 6*d.*.]

A.D. 1853, October 21.—N^o 2435.

CHALLETON, JEAN FRANÇOIS FELIX.—“Improvements in “carbonizing and distilling peat, coal, wood, and other animal, “vegetable, and mineral substances.”

In this case the “retort” is made of considerable length, a portion of which protrudes beyond the end of the furnace, and is consequently in a cool state. The retort may be divided by gas-tight doors into several compartments, and along the bottom of it is laid a line of rails, broken at each sliding door; and in each compartment is a waggon, made of iron or clay, on wheels,

running on the rails, and containing the material to be carbonized or converted into gas ; on one side of each waggon is fixed a rack into which a pinion works, the shaft of which comes out through the brickwork, and may be suitably actuated. These waggons are moved forward progressively, and as they are caused to travel in the opposite direction to that of the heat, they pass successively through the various chambers, from a low temperature to a higher one, until the carbonization is complete ; the foremost waggon is then propelled into the cool chamber, which is called the "extinguishing chamber." The waggons are assisted in their forward motion by a slight incline given to the sole of the furnace.

[Printed, 1s. 2½d.]

A.D. 1853, October 31.—N° 2519.

PECHOIN, CELESTIN, and BARADES, EUGÉNE PECHOIN.—(Provisional Protection only).—"Improvements in utilizing the " saponaceous matters contained in the waste waters of woollen " and other manufactures."

" This invention consists in a means of extracting saponaceous " matters from the waste waters of woollen and other manufac- " tories, and in re-converting the same into soap. The product " thus extracted may also be employed in the manuring of land, " in the manufacture of gas for illumination, in the production of " a composition for covering roads or ways, in lubricating ma- " chinery, &c."

" The saponaceous matters are obtained by pouring into the said " waste waters hydrate or sulphate of lime, by which means a soap " of lime is precipitated."

[Printed, 2½d.]

A.D. 1853, November 1.—N° 2523.

HANSOR, JAMES.—(Provisional Protection only).—" Im- " provements in the manufacture of illuminating gas."

" Which consist of two retorts or chambers, or two chambers " in one retort ; both these retorts or chambers are heated by " fires. Into the first of these chambers is inserted a vessel or " cradle, or vessels or cradles, containing oil, grease, resin, or " other substance capable of being converted into illuminating " gas, or mixtures of the same, either alone or mixed with sawdust,

" or sand or coke, or other absorbent substance. The cradles
 " may be covered with perforated covers, and the upper part of
 " their sides may also be perforated. The oil or other substance
 " is partially decomposed and volatilized by the heat, and the
 " products are conveyed into the second chamber or retort, where
 " the decomposition is completed, and the whole or the greater
 " part of the volatile products are converted into illuminating
 " gas."

[Printed, 2½d.]

A.D. 1853, November 4.—N° 2561.

GINTY, WILLIAM GILBERT.—" Improvements in the mode of
 " manufacturing the combustible gases resulting from the de-
 " composition of water or steam, and in the construction of
 " apparatus connected therewith."

These consist in "apparatus for producing hydrogen, carbonic
 " oxide, and other gas or gases, or the gas generally known as
 " 'water gas,' by exposing carbonaceous or other materials, such
 " as coal or cannel, coke, wood or peat charcoal, anthracite,
 " iron, and other materials, or a combination of any two or more
 " of the same, to high temperatures in close vessels or retorts
 " made of iron or fire clay, and passing steam or water over, into,
 " or through the same."

The retorts used may be "of all or any such shapes or sizes,
 " but so that no part of the carbonaceous or other materials placed
 " in them for deoxidizing, or any other purposes, shall be at a
 " greater distance than three inches from the iron or fire clay, or
 " other material which form the sides or heating surfaces or
 " other parts of the said retorts; the said retorts, whether con-
 " structed with one or more chambers or compartments, to have a
 " passage or compartment of not less than six feet long, or one or
 " more passages or compartments measuring in the aggregate not
 " less than six feet long, for the reception of the carbonaceous or
 " other materials over or through which the steam or water, or
 " gas or gases, passes, or is intended to pass, during decom-
 " position or generation."

" The foregoing improvements may be effected also by intro-
 " ducing steam or water into the retorts in such manner as to
 " proportion or adjust the supply of the same to the varying
 " temperature of the retorts, and of the deoxidizing substance or

" substances which they contain, by mechanically regulating the
" supply tap."

[Printed, 3*d.*.]

A.D. 1853, November 8.—N° 2589.

GARDINER, JOHN, and WYNNE, WATKIN WILLIAM.—(Provisional Protection only.)—" An improved construction of gas
" stove."

" The case of the stove we prefer to make cylindrical, with a
" pierced dome-shaped top. Near the upper part of the case are
" shoulders to receive an inverted conical boiler, and hold it in
" position; the lower part of this conical boiler is surrounded by
" a ring of gas jets, which, by playing upon the inclined surface
" of the boiler, communicate heat thereto. At the bottom of the
" boiler is a draw-off pipe, and at its upper end is a water-supply
" pipe, which permits also of the escape of steam. The stove
" thus constructed will possess a great radiating power, and afford
" a means of providing a good supply of hot water. When re-
" quired, the boiler may be lifted out of the case by merely
" removing the top of the case and disconnecting the draw-off tap
" from its pipe. Without the boiler the stove may be used as an
" ordinary gas stove."

[Printed, 2*d.*.]

A.D. 1853, November 10.—N° 2604.

STEVENS, JAMES.—(Provisional Protection only.)—" Improve-
" ments in the steps or bearings of the axles or shafts of gas
" meters."

" These consist in employing non-metallic steps and bearings
" in gas meters made of stones or glass or vitrified matter, and
" also in some cases of ivory or bone."

[Printed, 2*d.*.]

A.D. 1853, November 19.—N° 2693.

DIMSDALE, THOMAS ISAAC.—" The use and preparation of
" certain solid and liquid substances, for the defecation, purifi-
" cation, and decolorization of saccharine juices and syrups or
" solutions, and for neutralizing, decomposing, and absorbing
" noxious and fetid gases."

" For decolorizing or purifying syrups or saccharine solutions
 " it is proposed to mix blood with peat, earth, spent tan, sawdust
 " or any fibrous or woody matter, divided or powdered, and to
 " char or convert the mixture into charcoal by any of the ordinary
 " methods by which charcoal is made."

" In like manner, clay or other aluminous earths may be used
 " for the above-mentioned purpose, mixed with blood, and then
 " roasted or burned in retorts, kilns, or by any of the methods by
 " which charcoal is prepared. Bituminous shale, charcoal, or any
 " description of charcoal, washed and cleansed, may be mixed with
 " blood, and if the blood be fresh the mixture may be used in that
 " state, or when so mixed the mass may be re-charred. Either of
 " these preparations can be employed precisely as bone charcoal
 " is."

Firstly, "for purifying or deodorizing gases, I employ peat,
 " earth, spent tan, or other fibrous or woody material, charcoal of
 " any description, or aluminous earth, either baked or roasted or
 " raw, macerated in or saturated with the water found in coal
 " and other mines, which water commonly contains a considerable
 " proportion of metallic matter in solution."

" In the second process for purifying gas, in lieu of evaporation
 " by boiling or otherwise, marl, chalk, lime, or any alkaline earth
 " or alkali, well powdered, may be added to any of the materials
 " above enumerated, before mixing with the water, the mixture
 " being kept well stirred for a short time, and then allowed to
 " subside."

[Printed, 3*d.*.]

A.D. 1853, November 21.—N^o 2702.

LILLIE, Sir JOHN SCOTT.—(A communication.)—(Provisional Protection only.)—" Improvements in apparatus for the production of carburetted hydrogen gas."

" Each retort is set in an arch, and has direct and separate communications with the furnace, so that by the use of ordinary dampers only the exact number of retorts required are kept heated; and in the event of one of the retorts being worn out or deranged, it can be removed without interfering with the others. Iron or clay ribs are introduced longitudinally into the retort, and by their agency the coal is kept exposed to a greater surface of heat, and carbonization is carried on much more rapidly."

“ The atmospheric condenser is composed of angular tubes, “ with hydraulic caps. By means of the angles a greater amount “ of friction is obtained, and the gas consequently becomes more “ rapidly and thoroughly cleansed.”

“ The washer is made with vertical tubes, each having a flange “ at the bottom.”

“ The gasometer is set in a canal of proportionate size and “ depth, the sides built of brick, iron, wood, or stone, according “ to circumstances; the interior ground is left solid. The crown “ of the gasometer is flat, and the bearings, stays, &c. are above, “ instead of below and within. The gasometer may be composed “ of iron and flexible material for a small apparatus to work “ without water, and for use on board ships, and it may be used “ with or without a cradle.”

[Printed, 1s. 1½d.]

A.D. 1853, December 14.—N° 2899.

KAY, JOHN ZUILL.—“ Improvements in gas meters.”

This “ invention relates to the securing a correct water level in “ gas meters or apparatus for measuring and registering the flow “ of gas, whereby mistakes and frauds may be prevented. This “ is effected by the introduction or formation of a separate small “ chamber in communication with the water supplied to the “ meter. The outlet to the burners is taken from this chamber, “ the discharge pipe being carried down from the top of the “ meter to within a very short distance of the water line in the “ chamber. This tube is curved forward towards the front side “ of the meter, and its open lower end is flattened or so shaped “ that a very slight elevation of the water’s level will seal the tube “ and stop the discharge of gas. Hence if too much water is put “ into the meter, or if the meter is tilted up out of level, the “ discharge pipe is shut.”

[Printed, 4½d.]

A.D. 1853, December 15.—N° 2905.

RASCOL, EUGÉNE HIPPOLYTE.—(A communication.)—“ Im- “ provements in retorts for the manufacturing of gas.”

These improvements “ consist in constructing retorts of fire “ bricks or blocks of fire clay, properly prepared and burnt, “ which blocks are formed to dovetail, overlap, or interlock into

" each other, and are united by a cement capable of resisting the heat to which retorts are subject. The bricks or blocks are suitably formed according to the position they occupy in the retort. For the upper and arched part and the side, the bricks are formed, by preference, so that the sides all converge to a point. In so constructing the retort the form of the bricks would necessarily depend upon the form of the retort, but for the bottom and end, rectangular forms of brick will answer the purpose. It is unnecessary to give any description of the mode of manufacturing the bricks, the moulding and manufacture of fire bricks being well known, which is also the case with fire-proof cement."

[Printed, 7½d.]

A.D. 1853, December 17.—N° 2939.

ANDERSON, GEORGE.—" Improvements in apparatus used when manufacturing gas, which apparatus, or part of which, is also applicable when transmitting gas from one place to another."

" These improvements relate to arrangement of apparatus for withdrawing gas from the retorts or other generators employed in the manufacture of gas, in order to assist in relieving the pressure within such retorts or generators, and to force the gas generated to the purifying means or other apparatus."

" Apparatus thus arranged according to my invention is also applicable when transmitting gas from one to a distant place, and consists in the employment of a single cylinder or chamber, with a piston moving therein at a comparatively high velocity, say, equal to that of a steam-engine [70 to 150 strokes per minute], the cylinder or chamber being what is called double-acting, that is, having an inlet and outlet valve or sets of valves at each end thereof. These valves are arranged by preference close to the ends of the cylinder or chamber, and to be self-acting, or acting alone by the vacuum created or the pressure exerted; and in order to their being light and easily acted upon, it is preferred to form them of leather or gutta percha, or other suitable flexible material, which will not to any great extent be acted upon injuriously by the gas."

A compensating regulator may be applied, whereby some gas may be allowed to return to correct any tendency to create a vacuum by means of the pump.

[Printed, 10½d.]

A.D. 1853, December 28.—N° 3002.

PARKINSON, JOHN,—“ Improvements in governors for regulating the pressure of steam, gas, and other fluids or liquids.”

These consist, first, in the “application of a double compensating valve, acted upon by a flexible diaphragm or other equivalent agent for regulating the pressure of gas,” &c. The gas, &c., in flowing from the meter to the burners, is caused to pass through a double compensating valve enclosed in a box or chamber. The upper part of the box may be formed of an elastic diaphragm made of suitable material, and is attached to the spindle of the valves in a suitable manner. The greater or less degree of pressure of the gas causes the elastic diaphragm to be elevated more or less, which, actuating the valves, closes or opens them more or less, as required, and thereby ensures an uniformity of pressure of the gas as it proceeds to the burners. The diaphragm may be placed underneath, and in such a manner (as for instance in a tube or pipe) that it may be covered with water or other fluid, when it will be protected from the action of steam if the flow of that body be regulated instead of gas. An inverted vessel working in quicksilver may be made to displace the diaphragm. Suitable weights, screws, &c. are provided, for the purpose of adjusting the action of the diaphragm or inverted vessel.

[Printed, 6½d.]

1854.

A.D. 1854, January 4.—N° 19.

HULETT, DAVID.—(Partly a communication.)—“ Improvements in gas regulators for regulating the supply of gas to the burner.”

“ The object of this invention is to regulate the supply of gas as it issues from the main to the burner, in order to prevent fluctuation in the height of the flame, notwithstanding any difference that may occur in the pressure of the gas in the main,” and “ consists of a cast-iron vessel with inlet and outlet passages for the admission and emission of the gas. The inlet is covered by a valve, the edge of which dips into a groove containing mercury; this renders the joint perfectly gas-tight without impeding the motion of the valve, which is hung in

" such manner as to move with the slightest variation of pressure. The valve is attached by a rod to a short cylinder, the lower part of which is open and dips into a channel or groove containing mercury; the cylinder covers and surrounds the inlet passage. Thus, as the gas flows from the main through the inlet of the regulator, it exerts an upward pressure on the cylinder," the action of which is regulated by a lever and weight acting on the end of the rod which supports the cylinder, and which passes through the cylinder top. " If the pressure of gas issuing from the main be increased, it lifts the cylinder which closes the valve, but the consumption by the burners quickly reduces the pressure within the regulator; this causes the cylinder to fall and open the inlet passage. When the valve is secured to the box the joint of the valve rod is within a recess and below the surface of the mercury [introduced through a tube provided for the purpose], as also is the joint of the rod. This arrangement prevents the clogging of the joints arising from depositing of oily and bituminous matters."

A modification of this mode of regulating the flow of gas is also described, but disclaimed 31st July 1857.

[Printed, 1s. 2d.]

A.D. 1854,—N° 19*.

HULETT, DAVID.—(Partly a communication.)—" Improvements in gas regulators for regulating the supply of gas to the burner." (Disclaimer and Memorandum of Alteration, filed 3 August, 1857.)

The Patentee disclaims all parts contained in his specification dated 4th January, 1854, No. 19, " save and except the gas tight valve made by causing the valve to dip into mercury; the joints of the valve rod and of the rod placed within a recess below the surface of mercury; the tube and channels for introducing mercury into the interior of the apparatus, and the regulating lever or bar and weight mentioned in the specification."

[Printed, 10d.]

A.D. 1854, January 6.—N° 30.

EDWARDS, HENRY HIND.—(Partly a communication.)—" Improvements in treating peat and vegetable matters for the purpose of fuel, as well as in the extraction of other useful products therefrom."

These improvements relate to " apparatus for moulding, drying, and carbonizing, by torrefaction, peat and other vegetable matter, and at the same time extracting the volatile matters that

" may be contained therein ;" and consist, first, in the use of a " hydro extractor " for the purpose of extracting the liquid from peat which has been crushed and reduced to a pulp. The extractor may be placed vertically or horizontally, and it should contain inside a moveable " framing containing any desired number " of compartments or moulds to be filled with the crushed peat." A suitable aperture is provided for the admission of the peat, whereby also, air which may be heated can be introduced ; or ignited fuel itself may be introduced. By these means the peat will be dried or carbonized as desired. The products, whether liquid or volatile, are collected in the outer casting ; if volatile, they are passed on in the usual manner to the condenser, in order to separate the condensable from the permanent gases. When it is required to act with " promptitude upon large masses for the " carbonization of wood, lignite, &c., the patentee makes use of an apparatus, say 12 feet in diameter, and 3 feet deep, into the lid of which are introduced four pipes proceeding from fireplaces. A fan is caused to rotate in the interior of the apparatus, whereby the hot air from the fires is drawn and forced through the material placed inside to be operated upon. The oxygen of the air having been absorbed during its passage through the fires, the gases may be heated to a very high degree of temperature without igniting the matter exposed to their action ; or the material to be operated on (such as moulded peat, lignite, small coal, sawdust, tan, &c.) may be placed on a revolving endless web, so arranged that the upper surface of the web carrying the material is caused to enter at one end of a long box, and proceed forward and out at the other end. This box is supplied, by a fan placed at the exit end, with air heated as before described.

[Printed, 1s. 6d.]

A.D. 1854, January 6.—N° 34.

POOLE, Moses.—(A communication.)—(Provisional Protection only.)—" Improvements in the manufacture of dextrine, glucose, " and alcohol, and in employing the products of such manufac- " ture."

So far as this invention relates to " gas," it consists " in col- " lecting in gasometers, and employing for aerating liquids and " for other purposes," the " carbonic acid gas " liberated during the process of making the substances named in the title.

[Printed, 3d.]

A.D. 1854, January 10.—N^o 56.

BOWDITCH, Reverend WILLIAM RENWICK.—“ Improvements in the purification of gas, and in the application of the materials employed thereon.”

This invention consists in “ purifying coal and other gases employed for the purpose of illumination, by the aid or employment of clay or aluminous earth [the red or yellow varieties in preference], applied either alone or with the addition of lime, together with the application and use of the clay or other earth when impregnated with ammonia and other nitrogenous compounds from the gas, as a manure or fertilizing agent. These agents are used either in a dry [pulverized] or wet condition, and either alone or mixed with cinders, gravel, sawdust, or other convenient material to render the mass porous, and the crude or unpurified gas is then passed through it, or so as to be brought well in contact with it.”

“ This treatment removes the injurious matters contained in the gas, viz., carbonic acid, ammonia, sulphuretted hydrogen, cyanogen, and bisulphuret of carbon, and the compounds of these several matters.” The active properties of the clay may be revived several times by exposing it to the action of the air.

“ The spent clay, as fire-clay discharged from the purifiers and saturated with impurities, makes a useful manure by allowing it to dry, pulverizing it, and then spreading it over the ground. When the material has been well saturated, it is found that five or six hundred weight per acre is a good quantity.”

[Printed, 7d.]

A.D. 1854, January 11.—N^o 71.

LEESON, HENRY BEAUMONT.—“ Improvements in gas burners.”

This invention “ consists of a convenient means of combining air with gas in a gas burner. For this purpose the burner is constructed with [a chamber and] numerous small passages at the upper part,” through which “ the gas mixed with air” escapes and “ is burned. The burner is hollow, and the lower part is open for the admission of air, but capable of being closed more or less by a conical or other suitable form of valve on the inner tube, which introduces the gas into the hollow chamber of the burner, and the burner is made capable, by means of a screw, of rising or falling, so as to regulate the quantity of air which is

" permitted to flow into the hollow chamber of the burner." The object of this invention is to mix the air and gas in a chamber, or there may be two chambers, before it reaches the burner, which may be of any suitable form, whereby the greatest heating effect will be obtained from a given quantity of gas consumed.

[Printed, 10d.]

A.D. 1854, January 12.—N^o 76.

MOORE, THOMAS EDWIN.—(Provisional Protection only.)—

" Improvements in apparatus to be used for extinguishing fires."

These "improvements consist, firstly, in constructing a cylindrical boiler-shaped vessel formed of strong plate iron, set on a suitable carriage frame supplied with wheels, and carrying on each side communicating reservoirs for water, having also in front a sliding door and circular mouth-piece at which to supply the requisite materials for its operation, and at its back end a suitable pipe for attaching a hose to lead to the part on fire ; and, secondly, to a syringe or plunger for charging the apparatus at the sliding front door before named by the rapid action of a suitable piston."

" This apparatus is intended for the speedy and continuous application of the vapour of water and gases which do not support combustion to the extinguishing of fires, and may be supplied for that purpose with any of the known suitable chemical mixtures which most readily and economically afford the requisite gases and vapour."

[Printed, 3d.]

A.D. 1854, January 16.—N^o 102.

WILSON, GEORGE FERGUSON.—" Improvements in treating castor oil, and obtaining products therefrom."

These improvements consist, first, "in subjecting castor oil to the action of heat before or after submitting it to the action of the acid," for the purpose of producing "palmine or palmic acid." The acid referred to may be hyponitric, nitrous, or sulphurous.

Secondly, "in boiling palmine or palmic acid in water or acidulated water by the aid of free steam."

Thirdly, consists "in separating the more liquid from the more solid parts by subjecting palmine or palmic acid to pressure, or by centrifugal apparatus, without dissolving the palmine or palmic acid in alcohol or ether."

“ Fourthly, in heating palmine or palmic acid (which has been obtained by acting on castor oil without previously heating it), and allowing it to cool slowly in order to crystallize the same, and thus to facilitate the separation of the more fluid parts.”

“ Fifthly, in generating the acid gas used in a separate vessel or apparatus, and conducting into castor oil, in order to solidify it, in place of generating the gas by introducing the matters into the oil as heretofore.”

[Printed, 4d.]

A.D. 1854, January 28.—N^o 214.

CHADWICK, DAVID, and HANSON, GEORGE.—(Provisional Protection only.)—“ Improvements in meters for measuring water or other liquids, and vapours or gas.”

“ These improvements, which are in connexion with a former patent granted to us, dated 31st March 1853, consist in the adaptation of a rotary governor with arms or vanes acting upon the vertical central shaft with which the conical roller or rollers is or are connected in the drawings of our former specification ; and to this central rotary shaft is connected a new construction of counting machine for registering the quantity of fluid passed. The peculiarity of this counting machine consists in the use of a convolute curved groove or similar projecting surface, upon which as the central shaft revolves, a travelling indicator passes gradually from the circumference to the centre of the curve, and again from the centre to the circumference, which travelling indicator is designed to operate in place of an ordinary train of counting wheels.”

[Printed, 3d.]

A.D. 1854, January 30.—N^o 228.

JOHNSON, JOHN HENRY.—(A communication from Koechlin, Andre; Duchatet, Napoleon Joseph Vicomte; and Perpigna, Joseph Antoine Auguste de.)—“ Improvements in the manufacture or production of gas, and in the application of the materials employed therein.”

These consist, first, “ in the extraction of gas from turf, wood, tar, and other materials [such as waste cotton, paper, chips, and sawdust] by dividing the operation into two processes, whereby the inferior gas derived from the said materials is obtained separately from the superior gas derived from oils and essences,

" such gases being afterwards combined or used separately for " lighting or heating purposes." To effect this the turf or peat may be distilled at a red heat, and the resulting gases and vapours passed through a refrigerator, where the condensable matters will be detained, and the incondensable gas will pass on to the gas-holder. This gas, which has very slight illuminating properties, may be enriched by the addition of other gases after this manner: The volatile oils found in the refrigerator, or other oils, such as the oil of tar and essences, are passed in by means of a pipe into a heated retort containing carbonized peat, the vapours from which are caused to flow into another heated retort divided into two compartments, or into heated pipes, where they are converted into permanent gas, having a high illuminating power. Such gas after being passed through the lime purifiers, is mixed with the previous poor gas in the gas-holder, and may be used for the purposes of light and heat. The drawings attached to the specification show a stove adapted for the purpose of heating.

Secondly, consists "in the peculiar arrangement and construction of the retort" employed. The sides and rounded roof of this retort are made of iron, the bottom being made separate and of fire clay tiles luted to each other and to the retorts with clay; internal flanges cast upon the iron sides support this floor, and the whole is kept tight by suitable transverse tie rods.

Thirdly, it is proposed by the inventors to make also the following products from the "essential oils derived from carbonized turf;" "first, a liquid almost free from odour, suitable for burning in lamps, or the manufacture of hard varnish; second grease for lubricating railway carriage and other wheels; third, hard soaps for the toilette and other purposes; fourth, a thin oil of fine quality, suitable for lubricating the most delicate mechanism." The specification describes the means employed for obtaining these several products, and also the modes of purifying them. Much depends on the precise temperature of the steam or heat used for distilling; and also in the exact addition of sulphuric acid and other substances for obtaining the desired results. "Talc, plumbago, and lamp black," may be added to lubricating oils to increase their consistency. A "hard soap" may be prepared by adding to "tallow or palm oil soaps," "fifteen per cent. of the oil No. 2, such oil being saturated with ammonia and agitated with ten per cent. of its weight of soda lye of 60° "Cartier."

A.D. 1854, January 31.—N^o 234.

YOUNG, LUTHER, and MARTEN, EDWIN.—“Improvements
“ in apparatus for regulating the pressure and supply of gas.”

To effect “this purpose, a valve is suspended to the shorter end
“ of a lever,” and “the other or longer end of the lever is connec-
“ ted by a rod to an inverted vessel, which dips into water or other
“ fluid, and such vessel is made to float by means of one or more
“ floats in a tube or tubes containing quicksilver or other fluids,
“ and the exact pressure is obtained by weights applied to the
“ inverted vessel. The gas coming to the apparatus, subject to
“ more or less excess of pressure, raises the inverted vessel to such
“ an extent as to close the valve to the degree which will admit of
“ the quantity of gas required for the consumption, passing at
“ the pressure desired.”

Second, “where several burners are used at different elevations,
“ or require different degrees of pressure of gas, partitions with
“ different sizes of orifices,” are introduced into “the burners, by
“ which only the desired quantity of gas will pass at the particular
“ pressure to the burners.”

[Printed, 5d.]

A.D. 1854, January 31.—N^o 242.

MALAM, WILLIAM.—“Improvements in apparatus for the
“ manufacture and holding of gas.”

“This invention consists, first, in constructing gas retorts with
“ one, two, or more ribs or ridges, rising from the bottom of the
“ inside thereof to about three inches, more or less, from the sur-
“ face.” The retort may be made of clay and the ribs or ridges
of cast-iron.

“Second, in constructing gas condensers of a zig-zag, serpentine,
“ or other than a straight form, in order to obtain a greater extent
“ of surface in a given space than heretofore.”

“Third, in constructing apparatus for washing gas, in such
“ manner that the gas is caused to pass down into the liquid
“ through a series of vertical pipes, and to ascend through a
“ layer of wire gauze, or finely perforated plate; and by means of
“ partitions in the washing vessel is further caused to pass through
“ as many sets or series as may be necessary.”

“And, fourth, in constructing gas holders, by sinking to any
“ required depth in the ground two concentric cylinders or circles,

" the space between which [forming a circular tank] is filled with liquid, and combining therewith a gasometer of the ordinary construction (except that the roof thereof is supported by girders placed outside instead of inside the top), and weighted with balance weights as usual; if necessary, the gasometer rising and falling in the space between the two cylinders sunk in the ground, according to the quantity of gas contained in it;" or the two concentric cylinders forming the tank may be elevated on pillars, whereby the space underneath may be rendered available for other purposes.

[Printed, 9d.]

A.D. 1854, January 31.—N° 244.

BEUDOT, PHILIBERT.—(Provisional Protection only.)—" Improvements in gas burners."

These consist in an arrangement of piping and "a hollow ball-like recipient of suitable capacity," being adapted to gas burners, whereby the gas in its passage to the burners may be heated to such a temperature "as will ensure a more profitable consumption, and prevent the loss of gas experienced with burning cold gas."

[Printed, 3d.]

A.D. 1854, February 1.—N° 246.

CHENOT, CLAUDE BERNARD ADRIEN.—" Improvements in accumulating, conducting, and treating gases of combustion, and also in generating and applying the same to metallurgic and other purposes."

This invention consists, "firstly, in the use of gas meters for collecting the gases evolved by metallurgic apparatus, such as furnaces, coke ovens, &c., and also of a jet of vapours for drawing and conducting the said gases under a gas meter."

" Secondly, the method of enriching gases, as above set forth, and particularly by means of precipitation and decantation, for the purpose of first obtaining pure carbonic acid, and abstracting nitrogen from gases of combustion, so as to obtain subsequently pure oxyd of carbon, the said precipitation and decantation also serving to obtain pure hydrogen, by separating carbonic acid from a mixture of hydrogen and carbonic acid, and also for obtaining pure carbonic acid by combustion for different manufacturing purposes."

" Thirdly, a system of generating gases by combustion, the
" essential features of this system being, 1, the use of the apparatus above described ; 2, the special use of carbonates or oxygenated salts, particularly carbonate of lime, employed with carbon,
" in order to obtain the least possible quantity of nitrogen ; 3, the
" revivification of calcareous matter or carbonates in general."

" Fourthly, a system of generating gases, by using fuel or combustible matter in a powder-like or pulverulent state by the help of steam or of a compressed gas, as above described."

" Fifthly, a system of compressing gasses for the purpose of better combustion, this compression being effected by pumps, connected with the gas meters, and forcing the gas into the apparatus for combustion."

" Sixthly, the above-described methods of burning gases, particularly by carrying away air by compressed gas, or gas by compressed air, either being injected into an annular opening by means of an internal tube, thus acting like steam blast in chimneys."

" Seventhly, combining the improvements claimed before for the purpose of generating, normalizing, enriching, classifying, or sorting and using gases. Thus, I claim the use of gases from furnaces, coke-ovens, chimneys of condensed smoke, and of the carbonic matters resulting therefrom. I claim also distributing the said gases in the same manner as lighting gases, by means of piping connected with the gas meters. Under this head I claim also the moveable arrangement of my apparatus on locomotives, on steam boats, for heating the boiler, and on vehicles for the purpose of producing gases, which may be thus distributed or delivered to consumers."

" Eighthly, the use of gases for melting, refining, welding, and moulding metals in the manners described, which differ entirely from the methods practised hitherto. The said use is founded upon the threefold calorific, chemical, and mechanical action, as set forth in my system, viz., this combined action is applied to refining pig iron in a melted or liquid bath by what I call the precipitation system ; this refining process, as shown, being applicable to all metals, and being only produced by the action of the gas, without requiring any tools or manual labour. The same refining process is also applicable to treating any oxyd, and hence oxyd of iron, which being brought to a liquid state, sets free the iron to be precipitated by a reducing action. As

" the said refining and reducing actions go on very quietly, and
" as the metal is precipitated in perfect order, the same as metal
" which is reduced in a solution by an electric current, this treat-
" ment yields at once solid metal, moulded upon the sole of the
" apparatus in which the operation has been carried on. Hence
" as a part of this system of refining by precipitation, I claim also
" moulding iron by the said system, in all possible shapes, from
" pig iron or ore, whilst it is being refined or melted."

The specification of this invention occupies thirty pages, and, as is the case sometimes with the inventions of foreigners, the meaning in the translation at certain parts is scarcely brought out.

[Printed, 1s.]

A.D. 1854, February 10.—N° 321.

DUCK, WILLIAM, and WILSON, WILLIAM.—(Provisional Protection only.)—" Internal gas heating apparatus." This invention consists in placing the burning jet of gas within the apparatus required to be heated. The drawings show the application of the jet to "an ordinary tinman's soldering iron."

[Printed, 5d.]

A.D. 1854, February 10.—N° 326.

YOUNG, JAMES.—" Improvements in gas making." In making illuminating gas from coal, as commonly practised, the process is intermittent in consequence of the charging and discharging of the retorts, and besides a notable part of the volatile matter of the coal is deposited as tar and other liquid compounds. These condensed products are known to consist mainly of the same elements as the illuminating gas itself, and in as far as they are less valuable than the volume of gas they are known to represent, their formation in the process of gas making is not desirable. This invention has for its object, accordingly, to render the process more economical, by making the working nearly continuous, and by preventing waste of the gas-producing constituents of the coal in the formation of tar, and the like, and consists essentially in so conducting the distillation of the coal as to convert nearly the entire available hydro-carbon products gradually and continuously into permanent gas. For that purpose I proceed as follows:—I set the retorts vertically

" in the oven, with their lower ends nearly on a level with the
 " furnace bars, and I cause the coal with which they are charged
 " to descend slowly and continuously from the upper to the lower
 " end of each retort [by means of a rod revolving in the interior
 " of the retort, provided with radial spikes], and be there dis-
 " charged regularly in the state of coke in any suitable manner.
 " I also place the passage for the exit of the gas at or near the
 " lower end of the retort, in order that the hydro-carbon vapours
 " formed in the upper parts of the retorts may be exposed in pass-
 " ing to the outlet to the higher temperature of the lower parts
 " containing the nearly exhausted coal, and be thereby converted
 " into permanent gas before they finally pass off from the retort
 " in which they are generated."

[Printed, 1s. 1d.]

A.D. 1854, February 20.—N° 401.

CHISHOLM, JOHN.—" Improvements in the purification of
 " gas."

This "invention consists in combining or mixing together and
 " using the peculiar red earthy or ochry-looking substances
 " found mingled with peat, and the subsoil of peat, with hydrate
 " of lime, or the mixed hydrates of lime and magnesia obtained
 " from magnesian limestone," for the purpose of purifying gas.

" The red earthy or ochry substance above alluded to is com-
 " posed chiefly of the oxides and salts of iron and manganese,
 " and the greater the amount of these metallic matters, the more
 " lime or lime and magnesia must be used. It is preferred to
 " use for every three parts by weight of metallic matters in this
 " earthy matter, one part of lime by weight. Instead of the
 " above red earthy matter, I sometimes employ in the same way
 " and proportion the fine red sandy gravel so general around
 " London, in the neighbourhood of chalk beds, or the red clay
 " which is so common around Rugby and other districts, or the
 " phosphate or subphosphate of iron, known by these names to
 " all geologists, and common in many boggy districts." " When
 " these substances or mixtures, or any of them, have ceased to
 " purify the gas from sulphuretted hydrogen and other impu-
 " rities, their powers may be again in part or altogether renewed
 " or restored by passing or forcing through them a current of
 " air, or even by merely exposing them to the air, after which

" they may be used over and over again, or many times in
" succession."

[Printed, 3d.]

A.D. 1854, February 21.—N° 411.

GEDGE, JOHN.—(A communication.)—“ Improvements in the
“ construction or adaptation of certain fittings for gas.”

These consist, first, in arranging round the gas pendant in a suitable manner, numerous “ fish-tail burners.” Such burners so arranged can be burnt with a regular flame and be set to an equal height of flame, and produce a great body of light at a cheap rate.

Second, relates to a mode “ of holding the water usually used where gas fittings are made to slide up and down, such as chandeliers,” and consists in screwing a funnel air tight into the water cup, converting it into “ a species of fountain,” from which the evaporation will be almost insensible, and the apparatus will act several years without requiring any fresh supply of water.

[Printed, 5d.]

A.D. 1854, February 21.—N° 422.

GOSSAGE, WILLIAM.—“ Improvements in the manufacture of certain alkaline carbonates, and in the useful application of such carbonates.”

These improvements consist, firstly, in “ the manufacture of bi-carbonate and sesqui-carbonate of potash, from ordinary carbonate of potash; also bi-carbonate and sesqui-carbonate of soda from ordinary carbonate of soda, by exposing an aqueous solution of such ordinary carbonate of potash or carbonate of soda to carbonic acid gas (produced by the combustion of carbon), by means of such an apparatus as is herein designated ‘ an ‘ absorbing tower’ ’ [the construction and arrangement of such towers being similar to those commonly used by manufacturers of soda for the condensation of muriatic acid gas]; “ also the manufacture of bi-carbonate of potash and bi-carbonate of soda from aqueous solution of sesqui-carbonate of potash or sesqui-carbonate of soda, by the same means.”

“ Secondly, in the manufacture of bi-carbonate and sesqui-carbonate of potash from ordinary carbonate of potash, also

“ bi-carbonate and sesqui-carbonate of soda from ordinary carbonate of soda (usually called soda ash), by exposing such ordinary carbonate of potash or ordinary carbonate of soda, when moistened with water, to carbonic acid gas, produced by the combustion of carbon.”

“ Thirdly, in the manufacture of bi-carbonate and sesqui-carbonate of ammonia in aqueous solution, by introducing ammoniacal gas and carbonic acid gas (produced by the combustion of carbon, or produced by the decomposition of bi-carbonate or sesqui-carbonate of potash or of soda) into the apparatus herein-before designated an ‘absorbing tower,’ a proper supply of water being also introduced into such absorbing tower.”

“ Fourthly, in the manufacture of bi-carbonate and sesqui-carbonate of ammonia in a solid state, by the combination of carbonic acid gas (obtained by the combustion of carbon, or obtained by the decomposition of bi-carbonate or sesqui-carbonate of potash or of soda) with ammoniacal gas obtained by the decomposition of sal-ammoniac, which sal-ammoniac shall have been produced by the decomposition of common salt with carbonate of ammonia.”

“ Fifthly, in the manufacture of bi-carbonate or sesqui-carbonate of ammonia in solution, by the introduction of ammoniacal gas and pure carbonic acid gas (obtained by the decomposition by heat of bi-carbonate or sesqui-carbonate of potash or of soda) into a ‘mixing vessel’” [which may consist of a vessel capable of being closed and provided with internal revolving agitators], “ together with a sufficient proportion of water to dissolve the whole or part of the ammoniacal salt so produced.”

The Patentee further claims as his invention, so far as this relates to “improvements in the useful application of certain alkaline carbonates,”—

“ Firstly, the useful application of bi-carbonate and sesqui-carbonate of potash, also of bi-carbonate and sesqui-carbonate of soda (all of these compounds having been previously manufactured according to the Patentee’s invention), for the purpose of supplying pure carbonic acid gas by their decomposition by heat, such gas to be applied to the manufacture of sesqui-carbonate or bi-carbonate of ammonia; such compound or compounds of ammonia so produced being used for the decom-

" position of common salt, and production thereby of bicarbonate
" or sesqui-carbonate of soda and sal-ammoniac."

" Secondly, the useful application of bi-carbonate and sesqui-
" carbonate of ammonia (manufactured according to this inven-
" tion), for the purpose of decomposing common salt, and thereby
" producing bi-carbonate or sesqui-carbonate of soda and sal-
" ammoniac."

[Printed, 1s.]

A.D. 1854, February 28.—N° 489.

WAY, JOHN THOMAS, and PAINE, JOHN MANWARING.—"An improvement in the manufacture of gas, and also of a charred product."

" This invention consists of distilling a compound matter, consisting of a stone or earth (largely composed of soluble silica, found in Surrey, and probably in other places), and tar or fat or oil, or other organic matter, and thereby obtaining gas, for the purposes of light and heat, and a charred product suitable for making filters, and for decolorizing and deodorizing purposes."

The Patentees "have discovered at the base of the chalk hills in Surrey, and it will probably be found elsewhere, a stone or clay which contains silica in the soluble state in large quantity, in some cases amounting to as much as seventy per cent. of the dry stone or clay. Such minerals are easily recognized by reducing them to a fine powder, boiling the powder in caustic soda, and afterwards adding to the solution formed an excess of hydrochloric acid, which precipitates the silica."

" Having selected the silica rock or earth, containing a high per-centge of silica, and as light and porous as possible, we dry it, either by exposure to the air or by artificial heat. We then break it into pieces (or into a coarse powder) sufficiently small that they may readily be penetrated throughout by the tar (in preference). We have found that when the tar is heated it will readily penetrate pieces of silica rock of the size of a man's fist; but when the tar is cold, and especially in cold weather, it is necessary to break the silica rock into pieces of the size of a hazel nut, or smaller. By boiling the tar with the fragments of rock in it for a short time, a more rapid penetration is effected; or the silica rock, being reduced to a coarse powder,

" may be mixed in any suitable way, as for instance, by a machine such as is used in pugging clay, with the tar into a thick paste. We find that the silica rock absorbs from one third to one half of its weight of tar, and we use it in this proportion when mixing it with the powdered rock."

" The second part of the process consists in exposing the silica rock saturated with tar or other liquid, as described, to a high temperature, in order that inflammable gases may be produced, and that charcoal may be deposited in the pores of the silica rock. This part of the operation must be conducted in retorts of iron or clay, as in the manufacture of animal charcoal or of coal gas." " The gas produced from tar in the way described is very pure, and requires less subsequent treatment than ordinary coal gas to make it fit for the general purposes of giving light and heat."

[Printed, 4d.]

A.D. 1854, March 1.—N° 502.

CLIBRAN, WILLIAM, and CLIBRAN, JOSEPH.—" Improvements in apparatus for regulating or governing the supply or pressure of gas as it is conducted from the main to the burners."

These consist of a slide valve of a peculiar construction, which is actuated by the elevation or depression of an inverted vessel or chamber. The upper portion of the valve forms "the frustum of a cone;" around this a collar fits, which rises and falls with the inverted vessel, to which it is connected, and thereby closes or opens certain "orifices or openings of the frustum-shaped slide valve." The varying pressure of the gas as it flows from the main to the burners elevates or depresses the inverted vessel, as the case may be, which, causing a corresponding rise or fall of the collar, will more or less close the apertures in the cone-shaped valve, and so reduce or increase the flow of gas as will ensure a uniform pressure on the burners at all times.

[Printed, 6d.]

A.D. 1854, March 9.—N° 565.

JOHNSON, WILLIAM BECKETT.—" Improvements in strengthening the ends of tubes to be attached to boiler plates, or to be used for other such purposes." " These improvements relate to

" a method of obtaining a thickened end or ends to tubes, where-
 " by they may with greater security be attached to boiler plates or
 " other apparatus to which metal tubular passages are required to
 " be fixed ; also where tubes are to be joined to each other with or
 " without intervening sockets, as gas pipes, steam, or air pipes.
 " To effect this, take a tube manufactured by any ordinary method,
 " and compress it [while hot] at the end or ends, so as to force a
 " certain length into a smaller longitudinal space, the consequence
 " of which will be the desired increase of thickness. This result
 " may be obtained by any mechanical arrangements" which will
 suitably press or jump up a portion of the length.

[Printed, 10d.]

A.D. 1854, March 10.—Nº 573.

PEACE, WILLIAM.—" Improvements in machinery for measur-
 " ing, indicating, and registering the flow of air, gas, and other
 " liquids, and for governing the speed of steam or other engines." This "invention consists," first, "in causing air, gas, or other
 " liquids, the flow of which is to be measured and indicated, to
 " impinge against a body suspended to a balanced beam connected
 " to an index." Secondly, "in registering the flow of liquids by
 " means of a marker, to which a varying motion corresponding to
 " the flow of the liquid to be registered is given by the balanced
 " beam above referred to, the said marker being held in contact
 " with a paper or other surface, to which motion is given by clock-
 " work ; and, lastly, in governing the speed of steam or other
 " engines by means of a lever connected to the balanced beam
 " above referred to, and to the valve or other agent through which
 " the steam or other fluid passes to the engine."

[Printed, 7d.]

A.D. 1854, March 10.—Nº 582.

NEWTON, ALFRED VINCENT.—(A communication.)—" Im-
 " provements in the mode of purifying coal gas, and of obtaining,
 " during the manufacture of the gas, a certain purifying material,
 " and in apparatus to be used in purifying gas."

" These improvements consists, first, in purifying coal gas
 " generally by introducing into it caustic ammonia, in sufficient
 " quantity, to saturate its free sulphuretted hydrogen as well as

“ its free carbonic acid, and then removing from it all the ammoniacal compounds by washing with water.”

“ Secondly, in purifying coal gas by introducing into it caustic ammonia, in sufficient quantity to convert its free carbonic acid into a salt of ammonia, washing out the ammoniacal salts in conjunction with the removal of its free or combined sulphuretted hydrogen by means of sulphurous acid, and finally washing the gas again with water.”

“ Thirdly, in the mode of introducing caustic ammonia into impure gas for its purification, by eliminating it from any mixture containing sulphate or muriate of ammonia in retorts connected with the hydraulic main, or other passage for the gas.”

“ Fourthly, in the use of a purifying vessel for purifying coal gas, either wholly or in part.” The purifying vessel referred to may consist of a vessel divided horizontally by as many divisions or shelves as may be required. These shelves are pierced with holes so small that the ascending gas prevents the liquor on the shelves from descending thereby.

[Printed, 4d.]

A.D. 1854, March 11.—N° 595.

JOHNSON, JOHN HENRY.—(A communication from Alexandre Martin.)—“ Improvements in lighting.”

The essential features of these improvements are the “ heating of the gas prior to its actual combustion; the supplying the flame with heated air; and the consuming the smoke and the general product of combustion.” The burner used may be of the common argand kind, surrounded as usual by a chimney glass. The top of the chimney is made to enter a chamber called the “ smoke burner,” into which the heated products of combustion enter, while at the same time some fresh air is admitted to the chamber by an annular opening for the purpose. A pipe is caused to descend from this chamber conducting a supply of the mixed hot “ smoke” and fresh air to the burner. The burner is provided with a “ wire gauze diaphragm,” and an “ external tube or casing,” which directs the hot air supply to the burner in the required manner. Another pipe for the gas is caused to enter the smoke chamber where the gas becomes heated in the pipe, and is then conducted down to the burner, where it is consumed. The arrangement of parts may be modified so long as the principle of the invention is adhered to.

"In order to obviate the defect of the shadow which would be thrown on to the ceiling of the apartment by the 'smoke burner,' a prismatic reflector of glass or other suitable material is employed, such reflector being in the form of a ring of a triangular section, which entirely surrounds the under edge or lip of the smoke burner."

[Printed, 1s. 4d.]

A.D. 1854, March 15.—Nº 617.

KAYE, THOMAS.—"Improvements in the manufacture of gas, and in the apparatus employed therein."

This "invention relates, firstly, to making gas retorts with a flue or flues through their centres, partially closed on the top for the concentration of the heat, which afterwards circulates through openings to the upper flue and chimney, by which plan I gain a much greater heating surface than is obtained by the retorts now in use."

Secondly, "to making the side flues thereof curved, so as to give a greater heating surface, and consequently to generate a greater quantity of gas from the same amount of fuel than can be done by the present system."

Thirdly, "to fixing a vessel over the mouth-piece, supplied with a continual stream of cold water, to prevent the accumulation of tar in the escape-pipe."

And fourthly, "to placing a bonnet at the upper part of the front of the retort, connected with a flue leading to the chimney, to take off the unpleasant effluvia when the retorts are being charged."

[Printed, 6d.]

A.D. 1854, March 17.—Nº 637.

HARRIS, RICE WILLIAMS, and PATSTONE, THOMAS.—"An improvement or improvements in shades or glasses for gas and other lamps."

"This invention consists in covering the tops of shades or glasses of gas and other lamps with a cap or dome of glass, china, or other substance not injuriously affected by the heat of the said lamps, the said cap or dome being provided at or near its lower edge with lateral openings or indentations through

“ which the heated air and products of combustion escape during
“ the use of the lamp.”

[Printed, 7d.]

A.D. 1854, March 20.—N° 657.

HORTON, JOSEPH, and POLGLASE, RICHARD JENKIN.—
“ Improvements in the construction of ships, boilers, girders,
“ tanks, gasometers, and other like structures or vessels.”

“ This invention consists in giving a peculiar form to iron
“ plates, usually called ‘boiler plates,’ by the employment of
“ which plates we are enabled to construct vessels, boilers, houses,
“ and other like structures capable of bearing a greater strain
“ without rupturing the seams than could be sustained by similar
“ structures manufactured with ordinary boiler plates.”

“ The form of this improved iron plate would be represented by
“ taking in iron plate measuring two feet by two feet, with its
“ surface marked into four equal portions, each being one square
“ foot, and then cutting away one such square foot portion. In
“ like manner, if a plate measuring three feet by two feet were
“ marked out into two rows of three squares each, measuring one
“ square foot each ; then, if two of those squares adjoining be cut
“ away from one of the rows of three squares the remaining plate
“ will also be of a suitable figure for our purpose.” Other shapes
may be adopted if the principle of the invention be adhered to.

[Printed, 6d.]

A.D. 1854, March 20.—N° 660.

LONGBOTTOM, JOHN.—“ Improvements in combining atmo-
“ spheric air with hydro-carbon for the purposes of light and heat.”
—(A communication.)

These consist, “ first, in passing atmospheric air through a bath
“ of pumice stone, or any other porous substance saturated with
“ caustic potassa, for the purpose of absorbing the carbonic acid
“ gas contained in the air, and then through a bath of pumice
“ stone or any other suitable porous substance saturated with
“ sulphuric acid for the purpose of absorbing any watery par-
“ ticles or aqueous vapours, and thoroughly desiccating or drying
“ the air and fitting it for the absorption of the vapours of hydro-
“ carbons, which renders it highly luminiferous, and well suited
“ for all the purposes of which illuminating gas is susceptible.

“ The hydro-carbon fluid preferred, and by use found to answer best, is a combination of bensole, sulphuric ether, and pine or rosin oil, one third of each.”

“ Second, the use of annular cups and floats for the purpose of thoroughly amalgamating the air with the mixtures of hydro-carbons, for the purpose of converting the air into illuminating gas.” The “annular cup” is the vessel containing the hydro-carbon, and the float is on the surface of the hydro-carbon under which the air to be charged is caused to pass.

“ And third, I claim the combination of the bellows” [to force the air forward] “with the drying box, heating box, amalgamating cylinder [annular cup], and gasometer, arranged for the purpose and in the manner described.”

[Printed, 10d.]

A.D. 1854, March 21.—N° 667.

HANSOR, JAMES.—“ Improvements in the manufacture of illuminating gas.”

“ The object of this invention is to subject the matters from which illuminating gas is to be manufactured, first, to a comparatively low temperature, so as to distil over vapours which are condensable, and consequently not readily inflammable, and then to cause such vapours to be again subjected to heat in a second retort more highly heated, so as to render the vapours previously condensable into incondensable gas. For this purpose the matters from which gas is to be manufactured are fed into a retort heated to a comparatively low degree, and the vapours proceeding from such retort are conducted into another retort, which is more highly heated, and it is filled with coke or matters which cause the vapours to be distributed in the retort in such manner as to ensure their being heated to a degree which will convert them into permanent gas. The heat of the vaporizing and also of the carbonizing retorts is regulated by suitable slides or dampers, the heat of the vaporizing retorts being kept down to the degree desired for only producing condensable vapours, whilst the heat of the other is kept up to a degree to insure complete conversion of the vapours into gas; and this may be tested from time to time to ascertain whether the heat is proper by having cocks on the pipes leading from the different retorts, by which a jet of vapour from the first

" retort, and gas from the second retort may be allowed to flow, " and thus to ascertain whether vapour or gas is passing off. " Between the first and second retort there is a cock or valve to " close the passage when charging the retort." In order to ascertain when the retorts are at a proper temperature to commence working the Patentee uses fusible metals. The matters to be converted into gas may be placed by preference in metal trays with perforated covers. Two or more vapourizing retorts may be used to one carbonizing retort.

[Printed, 7d.]

A.D. 1854, March 28.—N° 719.

HÄHNER, WILLIAM.—(A communication.)—" Improvements in the manufacture of alkaline sulphites, and in purifying and treating gases."

These consist in the use of a beater or instrument in combination with a vessel, whereby liquids are raised into spray for the purpose of acting on gases brought in contact with such spray.

" For this purpose a vessel may be formed very similar to that used in constructing a paper engine. This vessel is partly divided longitudinally, leaving an opening at each end of the partition, by which a continuous channel is formed for the fluid. On one side of the partition, and across this channel, there is a cylinder or wheel with numerous radial spokes or arms. The wheel or cylinder by its rotation gives motion to the fluid, and causes it to circulate in the channel. The bottom of the channel near the wheel is formed with two inclines, having between them a concavity in which the wheel partly revolves. The vessel is covered all over, and above the wheel there is an enlargement forming a closed chamber, into which the wheel throws the fluid. There is an induction pipe and an eduction pipe for the gases. When producing a sulphite of an alkali, a solution of the carbonate of the alkali is placed in the vessel, and sulphurous acid gas is conducted into the compartment above the wheel, and such gas will be brought in contact with the solution under the most favourable circumstances. In purifying or acting chemically on gases the purifying or chemical liquid is placed in the vessel, and the gas introduced and subjected to the action of the liquid contained

" in the vessel" as before explained. The machine may also be advantageously used in bleaching.

[Printed, 6d.]

A.D. 1854, April 3.—Nº 760.

ASHDOWN, WILLIAM.—"Improvements in gas stoves."

" This invention consists of a stove body or case fitted with " air channels communicating with the outward or fresh air, and " arranged to supply the apartment with a constant flow of " rarified pure air entering through one or more openings, and to " carry off the vitiated air freely over the fire. The stove may be " fixed in an ordinary fire-place, or it may be arranged to stand " out in the room or hall, as may be desired. It further consists " of an inner case or body provided with an inlet air valve at the " bottom, and a gas supply pipe, and in this case or body is " covered on the top by several sheets of woven wire. Into the " inner case or body, and through the woven wire, the gas and " atmospheric air will pass, and will, when ignited, issue in an " unbroken sheet of flame. Over this wire asbestos is spread in a " continuous sheet or layer. The gas is ignited over the asbestos, " and the supply is adjusted by valves to a degree sufficient to " warm the atmosphere of the apartment, and carry off the vitiated " air through the outlet pipe or flue."

[Printed, 5d.]

A.D. 1854, April 6.—Nº 803.

RICHARDS, WILLIAM.—(Provisional Protection only.)—"Im-
" provements in wet gas meters."

" This invention relates to certain improvements in gas meters " known as wet meters, and consists in the employment of a " partially spheroidal vessel as the measuring chamber, in combi- " nation with a universal joint valve motion and plumb valve."

[Printed, 3d.]

A.D. 1854, April 15.—Nº 877.

BARNETT, FREDERICK.—"Illuminated furniture, &c., for
" interior and exterior decoration."

This invention consists in the "application of various materials " capable of forming trees and all descriptions of foliage; also " human and animal figures of all kinds which can be used in the

“ manufacture of looking glass frames, picture frames, cornices,
 “ mouldings, &c., and all descriptions of shrubs, trees, foliage, and
 “ fountains, &c. bearing in coloured glass or any other transparent
 “ material, the representation of fruit, flowers, and figures, &c.,
 “ capable of illumination by gas conduits introduced in the course
 “ of construction for the supply of gas, for the escape of the
 “ rarified air, smoke, &c., and for the supply of fresh air in cases
 “ of fountains, so that by night time by means of colour, shape,
 “ and transparency, to represent the appearance of fruit, flowers,
 “ and figures of all kinds on the stems of trees, cornices, mould-
 “ ings, fountains, &c., whether as trees to be used as candelabrum,
 “ medallions, &c., or introduced in the foliage of all kinds of
 “ ornamental work.”

[Printed, 1s. 5d.]

A.D. 1854, April 18.—N° 897.

CHALLETON, JEAN FRANÇOIS FELIX.—“ Machinery for purifying and condensing peat, and also for conveying it.”

This machinery consists in an apparatus for “rasping” or cutting the peat into pulp, and afterwards screening and washing it. The peat so prepared is moulded and cut into cakes or bricks, and dried, or it may be mixed with “anthracite, lignite, coke, common coal, char and peat coal, or with powders of said fuels, for utilizing such combustible matters as would by themselves be difficult to burn, as well as resinous substances.” The specification also describes a mode of conveying the peat in baskets or buckets or otherwise, from one point to another, by means of suspending them from two cables with pulleys, &c.

(See Abridgments on this class of machinery.)

[Printed, 1s. 10d.]

A.D. 1854, April 20.—N° 914.

JOHNSON, WILLIAM.—(A communication from Etienne Abram Maccaud.)—(Provisional Protection only.)—“ An improved apparatus for discovering the leakage or escape of gas.”

This invention “consists in forcing a certain quantity of atmospheric air into the pipes and apparatus connected therewith by means of a force pump, the cocks of the burners and main cock being previously closed. A pressure guage or indicator is attached to the pipes to indicate the exact pressure within, and

" when any leakage is taking place it will at once be indicated by
 " the pressure guage, and the whistling of the out rushing jet:
 " a small safety valve is also fitted to the pipes to regulate the
 " amount of pressure within. The force pump before mentioned
 " is also applicable for cleaning the pipes by forcing a liquid
 " therein."

[Printed, 3d.]

A.D. 1854, April 29.—N° 966.

DIX, ALEXANDER MILLS.—(Provisional Protection only.)—“ Im-
 “ provements in apparatus for regulating or governing the supply
 “ or pressure of gas as it is conducted from the main to the
 “ burners.”

Consisting in the use “of two small inverted vessels, or air
 “ chambers, or gas holders, or gasometers,” or bags made of
 suitable materials, “one of which is enclosed by a vessel through
 “ which the gas passes ; the gas acting upon the upper surface of
 “ this gasometer or inverted vessel causes it to be depressed or
 “ elevated, so is the valve (to which it is attached and through
 “ which the gas has to pass) opened or closed, the valve for this
 “ purpose being of any suitable description ; and in order to
 “ facilitate the action of the inner or enclosed gasometer or vessel,
 “ a suitable communication is formed for the air to pass from the
 “ interior of the enclosed chamber or gasometer to the interior of
 “ the gasometer which is not enclosed, and consequently not
 “ exposed externally or influenced by the pressure of the gas.
 “ Thus it will be seen, that when the inner gas-holder or air
 “ chamber is depressed by the gas, the outer air chamber is
 “ elevated, and *vice versa.*”

[Printed, 3d.]

A.D. 1854, May 9.—N° 1034.

BERQUEZ, FRANCIS PETER.—(Provisional Protection only.)—
 “ Improvements in gas cooking and heating stoves, and in
 “ generating heat therefore.”

This invention consists in “constructing such stoves almost
 “ entirely of tiles or bricks, so that an earthenware surface is
 “ presented outside as well as inside the stove. The inside of the
 “ stove” is formed “of a series of corrugations or angular surfaces
 “ for the better reflection of the heat. The reflecting surfaces”

should be "of a bright ruby colour." The gas burner used "consists of a small earthenware chamber placed round the lower part of the stove, which emits two films of air in horizontal lines, one above and the other below a series of gas jets placed parallel between the two films of air."

[Printed, 3d.]

A.D. 1854, May 10.—N° 1042.

REECE, REES.—"The smelting of iron by means of turf or peat simultaneously with the combustion of the peat and collection of the products therefrom."

This invention "consists in the adaption and application of the Patentee's method of effecting the combustion of peat by means of blast, secured to him by letters patent, dated the twenty-third day of January one thousand eight hundred and forty-nine, to the smelting of iron; (that is to say), whereas, under his former patent the invention was confined to the treatment of peat in the manner described in the specification thereof, it is now combined with the smelting of iron."

"The furnaces, are filled with peat or turf, as dry as it can be procured; this is set on fire, a gentle blast is put on, the hoppers are closed, and the products of combustion sent from the furnaces through the pipes, into the hydraulic main, and thence through a suitable condenser, passing through its several arms or portions; the blast is then gradually increased to its full extent, the furnaces being replenished as the turf becomes consumed, so that they may be constantly kept full. When the furnaces have been in blast for some days, and in good working condition for distilling the turf, the blast is heated to from three hundred degrees to seven hundred degrees of Fahrenheit; iron ore and the usual flux are then mixed with the turf in the furnaces, the quantity of ore and flux being small at first, and gradually increased until the furnaces are fully loaded. The iron is removed from the furnace in the usual way. The products of combustion, consisting of tar, water, and inflammable gases, are collected; the water and tar in the hydraulic main, condenser, and scrubbers; the gases are conveyed therefrom by proper flues, direct to the various fires required in the works, and used therein as fuel; the water, consisting of acetate and carbonate of ammonia, and of methyllic

" alcohol, or wood spirits, is used for the manufacture of these substances; and the tar, consisting of paraffine and paraffine oil, is converted into these bodies."

[Printed, 1s.]

A.D. 1854, May 18.—N° 1106.

HINE, THOMAS CHAMBERS.—"A new method of applying glass in the ornamentation of chandeliers and other fittings required for gas, candle, oil, or other artificial light."

This "invention consists in the employment of glass in the form of beads and other like objects, and in threading or stringing the same on to metal or other tubes, chains, rods, or wires, so as to form a complete continuous covering thereto, each bead or other like object being separate and detached from the others. By this means is furnished a novel and peculiar mode of ornamenting chandeliers, wall brackets, lamp stands, and other fittings required in the use of gas, candle, oil, or other artificial light."

[Printed, 3d.]

A.D. 1854, May 23.—N° 1148.

RADIGON, ERNEST, and DE GRIMOUVILLE, RAIMOND GABRIEL.—"Certain improvements in glasses, shades, and smoke plates, used in gas and other lighting."

"The object of" these "improvements is to render less frequent the breakage of glasses, shades, and smoke-consuming plates, used for gas and other lights. This" is "effected by slitting the above articles longitudinally, or in any other suitable direction, so as to allow for the expansion and contraction to which vitreous matter is subject upon heating and cooling. The slit or fissure may be made during the process of manufacturing or blowing the above articles, or else it may be subsequently cut in the glass."

[Printed, 5d.]

A.D. 1854, June 6.—N° 1254.

PARKES, WILLIAM THOMAS.—(Provisional Protection only.)—"An improvement or improvements in the manufacture of the ornamental parts of gas fittings."

"These consist in making the ornaments used in gas branches, chandeliers, and lamps, of iron, instead of brass, as is usual."

These “ornaments” are made “either by stamping the same from “sheet iron or casting the same with cast iron,” and “may be “coloured or gilded, or decorated in any desired manner. In “stead of sheet iron, tin plate, or tinned iron, or galvanized or “zinced iron plate may be used.””

[Printed, 3d.]

A.D. 1854, June 9.—N^o 1272.

MARGUERITE, FRÉDÉRIC.—(Provisional Protection only.)—“Improvements in wet gas meters.”

These “improvements consist in certain contrivances to maintain a constant level of water in the cistern of gas meters. Above the cistern of the meter is placed at a suitable height a reservoir of suitable contents. This reservoir communicates with the cistern by means of a pipe descending into it to the level required. The communication between the reservoir and cistern can be shut off by a stopcock or other suitable means, and the reservoir is capable of being closed by a stopcock or other suitable contrivance. The water in the meter being at the proper level, the open orifice of the pipe will just touch the surface of the water also; the reservoir, being closed at the bottom, is supposed to have been filled from above. After which it is shut air tight above and opened below, thus forming a column of water resting on the surface of the level in the cistern, on account of the pressure of gas in the cistern, and the vacuum in the reservoir above. Supposing, then, the level of the water in the cistern to sink by evaporation a little below the orifice of the above said pipe, the column of water will immediately descend and supply the water evaporated.”

[Printed, 3d.]

A.D. 1854, June 21.—N^o 1365.

HEATHER, JOHN FRY.—“Improvements in apparatus for regulating the flow of gas.”

“For this purpose there is an outer vessel, partly filled with water or fluid, and from this vessel the gas is conducted to the burners by a suitable pipe. The gas enters this vessel by a pipe, which is fixed vertically within the vessel, and it rises above the water or fluid contained in the vessel. There are also two atmospheric air tubes or passages fixed vertically in

“ the bottom of the vessel, and they also rise above the water or fluid in the vessel. Within this outer vessel there is a hollow float,” an inverted vessel floating in the water, with an annular space in the centre for the gas-entering pipes to pass up through, “ the lower part of which is at all times immersed in the water or fluid. The upper part of the float has two hollow chambers, and it is into these chambers that the air pipes or passages before mentioned enter; hence the air in these chambers and the outer atmosphere are at the same pressure. The float carries a conical valve or other valve, fitting the mouth of the gas-entering pipe, for regulating the quantity of gas which shall be allowed to rise up the gas supply pipe. By this arrangement the float will at all times have a tendency to rise to its highest position, by which the valve or apparatus for regulating the passage of gas through the gas supply pipe will, where the float is at its highest, be most largely open; but when, by reason of the gas not being consumed as fast as the supply, there is more pressure in the vessel than that it is regulated for, such pressure will act on the float and cause it to be depressed, and the valve or apparatus for regulating the flow of gas will be more or less closed.”

[Printed, 6d.]

A.D. 1854, June 23.—Nº 1389.

DIMSDALE, THOMAS ISAAC.—“ An improvement in the manufacture of gas for lighting and heating purposes.”

This invention consists in “ the method of operating upon carbonaceous or bituminous substances (capable of yielding combustible gas for lighting and heating), by the introduction into the retort during the process of distillation of jets of superheated steam, for the purpose of decomposing the same, and causing its elements to combine in a nascent state with the gases evolved from the carbonaceous or bituminous substances contained in such retort.”

“ From the horizontal main steam pipe smaller perpendicular short branch pipes, provided with stopcocks, are made to ascend or descend towards the centre of the retorts. These branch pipes are to be connected by a screw joint, with a pipe passing through the lid or top of the retort, along the top inside, then down at the back, where the pipe is divided into

" three pipes that pass along the bottom. These bottom pipes
" are perforated with very fine holes underneath, so as to permit
" the escape of steam, and their ends are closed."

Secondly, in " mixing with solid carbonaceous matters [such
" as dried peat, lignite, sawdust, or charcoal], fatty, oleagenous,
" or resinous substances [or bog-head coal], previous to the same
" being placed in the retorts for the production of gas."

[Printed, 4d.]

A.D. 1854, July 8.—Nº 1504.

JOHNSON, JOHN HENRY.—" Improvements in the manufac-
" ture of carbonates of soda."—(A communication.)—See Abridg-
ments relating to the manufacture of carbonates of soda.

These improvements relate, " first, to the application and use
" of fuel gases, or the gaseous products arising from the com-
" bustion of fuel, for the obtainment of pure or nearly pure
" carbonic acid gas, by applying the said fuel gases under pres-
" sure to soda and potash, and to the carbonates or solutions
" of these mattters, so as to form highly carbonated compounds,
" from which pure or nearly pure carbonic acid gas is evolved by
" the agency of heat."

" Second, to the application and use of fuel gases in procuring
" comparatively pure carbonic acid gas, by applying the said fuel
" gases under pressure to water or to solutions, so that com-
" paratively pure carbonic acid gas may be obtained when the
" water is withdrawn and released from pressure, or when such
" impregnated water or solutions are heated."

" Third, to the application and use of fuel gases under pres-
" sure, directly to the decomposition of the salts of soda by the
" reaction of ammonical compounds, also such pressure being
" about sufficient for the production of such an atmosphere of
" carbonic acid gas as shall prevent any material volatilization
" of ammonia."

" Fourth, to the application of ' condensers,' for the absorp-
" tion or condensation of any ammonia contained in the gases
" evolved by the decomposition of the soda salt by ammonical
" compounds, as herein-before referred to, as well as for the
" absorption or condensation of any ammonia contained in the
" aeriform matter evolved from such decomposing process, or
" from any products obtained by such process."

[Printed, 5d.]

A.D. 1854, July 11.—N° 1519.

CUVIER, VICTOR GUSTAVE ABEL.—“An improved apparatus “ having for object the combustion of fuel, and the utilization “ of the gaseous products for heating, and other useful metallurgical purposes.”

This “improved apparatus, which the Patentee intends to “ denominate the hyper-gazo-pyrogene, is intended for the production of combustible gases from wood, charcoal, peat, peat “ charcoal, coal, coke, anthracite, lignite, boghead coal, or bituminous schist, or other solid fuel; or, from these substances, in combination with tar or oily or fatty matters, sawdust impregnated with water or grease, tanner’s bark, or other substances capable of yielding combustible gases. The combustible gases produced by my apparatus may be employed for heating steam boilers, gas retorts, and distilling apparatus, and for heating furnaces for melting glass and enamels, baking bricks and pottery, “ burning lime and gypsum, heating and melting metals, and for heating purposes generally; and also for the reduction of ores or metallic oxides, and other metallurgical purposes. The hyper-gazo-pyrogene may be made of various forms, according to the fuel to be employed.”

The principle upon which the “hyper-gazo-pyrogene” is made, consists in placing two or three retorts together, either side by side, or one more or less above the other, each capable of being closed air and gas tight, and provided with suitable arrangements for the purpose of supplying it with fuel, steam, water, &c., as required. The fuel in the first retort being ignited, air or other gas is passed into it through a tuyere or blast pipe, and the resulting gases, heated to a high degree, are passed on and through the other retorts, carbonizing, distilling, &c. the contents thereof in the manner required. From the last retort a pipe proceeds for the purpose of conveying the ultimate gaseous product to its required destination. The Patentee shows the application of a “screw,” for the purpose of drawing out from one end of the retort or furnace the exhausted materials, and, by adding to the other end fresh supplies of fuel, a “continuous system of decomposition” may thereby be obtained.

[Printed, 10d.]

A.D. 1854, July 29.—N^o 1677.

FAWCETT, JOHN.—(Provisional Protection only.)—“An apparatus for regulating and economizing the consumption of gas generally, but more particularly when employed for the purposes of illumination.”

This invention consists as follows:—“In addition to the cock of the burner, as ordinarily employed for the purpose of turning the gas on and off at the burner, I also employ another cock of the following construction: that is to say, I form the seat of this last mentioned cock with a long collar or neck, and I employ a separate piece or key, which passes into said collar, and fits upon a piece fixed to or formed upon the large end of the plug; and to the opposite end of said plug I fix one end of a hand or indicator, the other and opposite end of which hand traverses over a dial plate fixed to the seat of the cock, so that upon observing the position of the hand upon the said dial, when the cock is adjusted, any attempt to alter the position of the cock by any other instrument than the one designed for that purpose will be indicated upon the dial.”

[Printed, 3d.]

A.D. 1854, August 2.—N^o 1699.

LEES, SAMUEL.—“Improvements in machinery or apparatus to be used in purifying gas for illumination.”

“This invention consists in agitating or giving motion to the dry lime used in the purification of gas for illumination, either by causing the said lime to be deposited in a trough, in which a screw or worm revolves, and through which the gas is conducted, or by other suitable arrangement of machinery or apparatus.” If a screw and trough be used, the pure lime being introduced at one end will be screwed forward and discharged in an impure state into a proper receptacle at the other end of the trough.

[Printed, 9d.]

A.D. 1854, August 7.—N^o 1729.

DUQUESNE, EMMANUEL FRANÇOIS.—“An improved mode of manufacturing gas for illumination.”—(Provisional Protection only.)—“This invention relates to the substitution of bones and other animal refuse of a like nature for coal, resin, and such like carbonaceous matters heretofore employed for the manufacture

" of gas for illumination, the object being to simplify and cheapen
 " the process. In carrying out this invention I propose to use
 " the apparatus ordinarily employed for the manufacture of gas
 " from coal and resin; some modifications being, however, made
 " in the purifying apparatus. The retorts being charged and
 " heated, gas is evolved, which is conducted off to the purifiers,
 " where it is separated from the ammoniacal and other gaseous
 " impurities, and is made fit for the purpose of illumination."

[Printed, 3d.]

A.D. 1854, August 11.—N^o 1753.

BICKERTON, SAMUEL.—"An improved gas-light governor or
 " regulator, which invention is also applicable to regulating the
 " supply of water and other fluids."

This apparatus "may be described as an inverted siphon, one
 " leg of which being open to the pressure of the gas or other
 " fluid to be regulated, and the other leg being in communication
 " with the atmosphere." The leg of the siphon in communica-
 tion with the gas is made in the form of a chamber, and is
 provided with an inlet and an outlet pipe for the gas. The outlet
 pipe, or pipe proceeding to the burners, is fitted with a valve
 which is attached to a float floating in the water (or other fluid)
 contained in the chamber. The surface of the water in the
 chamber is elevated or depressed according to the pressure of the
 gas above, and as the float (which in preference is made to be
 nearly of the same specific gravity of the water or other fluid in
 which it floats) rises or falls with the water, it thereby opens or
 shuts the exit valve as required, and thus regulates the flow of
 gas or other fluid.

[Printed, 5d.]

A.D. 1854, August 16.—N^o 1782.

FORSTER, WILLIAM CHARLTON.—(Provisional Protection
 only.)—"The manufacture of gas for illumination and heating
 " from materials not hitherto employed for such purpose."

This may be effected by burning "the refuse bark, called tan,
 " after it has been used for tanning, and hops, after they have
 " been used for brewing beer; and sawdust, in a retort, such as
 " is used for making coal gas, in equal parts or separately, till
 " they are reduced to charcoal, so as to produce gas."

[Printed, 3d.]

A.D. 1854, August 22.—N° 1840.

JACQUELAIN, AUGUSTIN.—“Improvements in the manufacture of gas for illumination and heat.”

These improvements consist, firstly, in “the manufacture of gas for illumination and heat, by exposing carbon, either alone or in combination, to an excess of steam at a high temperature, so as to convert the carbon into carbonic acid, which is afterwards absorbed and removed by means of lime or other suitable substance, leaving the hydrogen of the steam in a free state, and with little or no admixture of carbonic oxide, as herein-before described.”

“Secondly, in the purification of water gas, obtained by any of the ordinary means, by exposing it with an excess of steam to a high temperature, so as to convert the carbonic oxide into carbonic acid, which is afterwards absorbed by lime or otherwise, leaving the hydrogen pure, or nearly so, as herein-before described.”

“Thirdly, in the decomposition of coal gas, by exposing it with an excess of steam to a high temperature, so as to convert the carbon and carbonic oxide into carbonic acid, which is afterwards absorbed by lime or otherwise, leaving the hydrogen pure, or nearly so, as herein-before described.”

“Fourthly, in the manufacture of illuminating gas, by passing hydrogen gas manufactured as herein-before described, and free or nearly so from carbonic oxide, through a retort containing coal, and heated by a sand bath, as herein-before described.”

[Printed, 4d.]

A.D. 1854, August 23.—N° 1854.

BÉRARD, ARISTIDE BALTHAZARD.—“Improvements in the manufacture of gas, coke, and other products, from coal, and in apparatus for that purpose.”

These improvements consist, “firstly, in the manufacture of gas, coke, and other products from coal, by distilling the coal in masses of not less than one ton in a cylindro-conical fire-clay retort, having its axis inclined to the horizon at an angle of not less than forty degrees, nor more than sixty degrees, and having in its axis a detached or moveable perforated pipe, bywhich the gas is withdrawn from the centre of the mass of coal by means of an exhauster, and which perforated pipe is capable of being

" removed during the operation," and before the discharging of the coke.

Secondly, "in constructing apparatus for the manufacture of gas, coke, and other products, from coal, by the combination of a self-regulating exhauster with" the above retort. This exhauster becomes self-regulating by the pressure of the gas acting more or less on the surface of water contained in a siphon box; as the float is elevated or depressed more or less, the steam is more or less turned off the engine, and its speed consequently increased or diminished as required.

And thirdly, the combination with such apparatus of a cylindrical extinguisher for extinguishing the coke, with a double casing for containing water, and supported on trunnions on a carriage, and so arranged as to be capable of being applied to the lower end of the inclined retort, and of being moved away when filled with coke, which may be discharged by inclining the extinguisher.

[Printed, 1s. 1d.]

A.D. 1854, August 24.—N^o 1858.

BROOKE, WILLIAM.—"Consuming smoke and condensing noxious and other gases and vapours, and converting the products thereof to valuable purposes, which now escape to the injury of the animal and vegetable life."

This may be effected by "consuming smoke and the products of combustion generated in the furnaces of steam boilers, and in ordinary and other fire-places, by causing such products to be passed while in the heated state through a second fire-place, wherein is deposited a quantity of charcoal or coke, breeze or other suitable fuel, in an ignited state, and kept so ignited by the mixed currents of heated air and smoke from the first furnace. The gases and other products, after passing through the second or charcoal fire, are caused by means of a fan blower or other suitable apparatus, to pass or circulate through a condensing apparatus, wherein they become deprived of their noxious qualities, and escape to the outer atmosphere in a pure but heated state, and may then be applied to various useful purposes, such as heating and warming, &c. The condensing apparatus preferred, is composed of a chamber or reservoir for containing an alkaline solution, such as lime and caustic

" potash ; and the pipe leading from the fan, and conducting the " heated vapours from the furnace, is caused to dip beneath the " alkaline solution, and to discharge its contents into it." " The " vapours, after being thus purified, issue through a worm at the " top of the chamber, and any steam that may be mixed with the " vapours becomes condensed therein, and runs down into the " chamber, and the pure but heated vapour alone issues out " through an orifice in the top of the worm. Should it be desired " to convert the heated gases and vapours from the first and " generating furnace into a gas for lighting and heating purposes, " dispense with the second or charcoal furnace, and pass the " gases and vapours direct to the purifying chambers, where " they become purified of their noxious qualities, and are converted " into a luminous gas."

[Printed, 8d.]

A.D. 1854, August 28.—N° 1882.

KIRKHAM, JOHN, and KIRKHAM, THOMAS NESHAM.—
" Improvements in the process of manufacturing and purifying " gases for lighting and heating, and in apparatus to be employed " therein."

This invention consists, first, in heating coke to a high state of ignition, in a furnace capable of being closed, by means of streams of heated air, then passing steam through it, or injecting water, and collecting the resulting gases.

Second, in a chamber, which may be heated, called the " mixing " chamber," containing " porous material." The gas from the coke is caused to pass through this chamber, through which is also passed at the same time a stream of gas " rich in carbon."

Third, consists in arrangements of flues and branching flues for heating the air which supplies the fire-places of such ovens. The arrangements may vary according to the fuel employed.

Fourth, consists in purifying gas by bringing it in contact with pulverized " refuse coke derived from boghead coal," " and mixed " or not with other materials."

[Printed, 1s. 4d.]

A.D. 1854, September 8.—N° 1967.

LAMING, RICHARD.—(Provisional Protection refused.)—" Im- " provements in purifying gas from ammonia and other impu-

" removed during the operation," and before the discharging of the coke.

Secondly, "in constructing apparatus for the manufacture of gas, coke, and other products, from coal, by the combination of a self-regulating exhauster with" the above retort. This exhauster becomes self-regulating by the pressure of the gas acting more or less on the surface of water contained in a siphon box ; as the float is elevated or depressed more or less, the steam is more or less turned off the engine, and its speed consequently increased or diminished as required.

And thirdly, the combination with such apparatus of a cylindrical extinguisher for extinguishing the coke, with a double casing for containing water, and supported on trunnions on a carriage, and so arranged as to be capable of being applied to the lower end of the inclined retort, and of being moved away when filled with coke, which may be discharged by inclining the extinguisher.

[Printed, 1s. 1d.]

A.D. 1854, August 24.—N^o 1858.

BROOKE, WILLIAM.—" Consuming smoke and condensing noxious and other gases and vapours, and converting the products thereof to valuable purposes, which now escape to the injury of the animal and vegetable life."

This may be effected by " consuming smoke and the products of combustion generated in the furnaces of steam boilers, and in ordinary and other fire-places, by causing such products to be passed while in the heated state through a second fire-place, wherein is deposited a quantity of charcoal or coke, breeze or other suitable fuel, in an ignited state, and kept so ignited by the mixed currents of heated air and smoke from the first furnace. The gases and other products, after passing through the second or charcoal fire, are caused by means of a fan blower or other suitable apparatus, to pass or circulate through a condensing apparatus, wherein they become deprived of their noxious qualities, and escape to the outer atmosphere in a pure but heated state, and may then be applied to various useful purposes, such as heating and warming, &c. The condensing apparatus preferred, is composed of a chamber or reservoir for containing an alkaline solution, such as lime and caustic

" potash ; and the pipe leading from the fan, and conducting the heated vapours from the furnace, is caused to dip beneath the alkaline solution, and to discharge its contents into it." "The vapours, after being thus purified, issue through a worm at the top of the chamber, and any steam that may be mixed with the vapours becomes condensed therein, and runs down into the chamber, and the pure but heated vapour alone issues out through an orifice in the top of the worm. Should it be desired to convert the heated gases and vapours from the first and generating furnace into a gas for lighting and heating purposes, dispense with the second or charcoal furnace, and pass the gases and vapours direct to the purifying chambers, where they become purified of their noxious qualities, and are converted into a luminous gas."

[Printed, 8d.]

A.D. 1854, August 28.—N° 1882.

KIRKHAM, JOHN, and KIRKHAM, THOMAS NESHAM.—
" Improvements in the process of manufacturing and purifying gases for lighting and heating, and in apparatus to be employed therein."

This invention consists, first, in heating coke to a high state of ignition, in a furnace capable of being closed, by means of streams of heated air, then passing steam through it, or injecting water, and collecting the resulting gases.

Second, in a chamber, which may be heated, called the " mixing chamber," containing " porous material." The gas from the coke is caused to pass through this chamber, through which is also passed at the same time a stream of gas " rich in carbon."

Third, consists in arrangements of flues and branching flues for heating the air which supplies the fire-places of such ovens. The arrangements may vary according to the fuel employed.

Fourth, consists in purifying gas by bringing it in contact with pulverized " refuse coke derived from boghead coal," " and mixed " or not with other materials."

[Printed, 1s. 4d.]

A.D. 1854, September 8.—N° 1967.

LAMING, RICHARD.—(Provisional Protection refused.)—" Improvements in purifying gas from ammonia and other impu-

" rities, in obtaining ammonia and certain salts of ammonia and " soda, and in treating certain salts of ammonia."

" This invention relates, 1st, to the use of a rotating sieve for " distributing liquids in gas purifiers, and to the purifying of " gas from ammonia, by liquids repeatedly returned to the " purifiers with successive additions of sulphuric acid."

" 2ndly, to the purifying of gas from its carbonic and hydro- " sulphuric acids and ammonia, by a systematic application of " water, and a suitable hydro-sulphate of ammonia."

" 3rdly, to the obtaining of ammonia and hydro-sulphate of " ammonia in a state suitable for purifying gas, by decomposing " any ordinary hydro-sulphate of ammonia by oxide of iron or " other cheap metallic oxide."

" 4thly, to the obtaining of ammonia and hydro-sulphate of " ammonia in a state suitable for purifying gas simultaneously " with carbonate of soda, by decomposing in heated retorts or " chambers a mixture of a carbonate of ammonia and sulphuret " of sodium with or without oxide of iron or other cheap metallic " oxide."

" 5thly, to the heating of certain carbonates of ammonia for " producing and purifying sesqui-carbonate of ammonia, and to " the consolidation of certain salts of ammonia by pressure, as a " substitute for sublimation."

[Printed, 3d.]

A.D. 1854, September 12.—N° 1984.

LAMING, RICHARD.—(Provisional Protection only.)—" Improve- " ments in purifying gas from ammonia and other impurities, and " preparing pure gas for burning; in obtaining ammonia and " certain salts of ammonia and soda, and in treating certain salts " of ammonia."

" This invention relates 1st, to removing odorous compounds " from impure gas, and adding to deodorized gas odours less " objectionable than those which have been removed."

" The gas is purified from ammonia and certain acids, by " means of water and ammonia partly saturated with hydro- " sulphuric acid, which ammonia may be obtained at very little " cost, by a process herein-after explained."

" Sometimes the ammonia is removed by liquids repeatedly " returned to the purifiers with successive additions of sulphuric

" acid, and there should be introduced into pure gas odours
" obtainable from boghead coal, peat, factitious oil of almonds,
" or other suitable substance, and without which its use would be
" attended by danger of explosion from leakage."

" 2ndly, to a process for obtaining at a cheap rate ammonia
" sufficiently free from hydro-sulphuric acid for the above pur-
" pose, the said process simultaneously yielding carbonate of
" soda. This process consists in heating a mixture of a carbonate
" of ammonia and sulphuret of sodium with or without oxide,
" of iron or other cheap oxide, according to the nature of the
" carbonate of ammonia which is used, or in heating a mixture of
" sulphuret of ammonia or of sodium and a suitable oxide."

" 3rdly, to the use of a rotating sieve for distributing more
" equally the purifying liquids in gas purifiers."

" 4thly, to preparing certain salts of ammonia for the market,
" which is done by submitting them to a high temperature in
" their purification (instead of using costly chemical re-agents),
" and consolidating them by the application of mechanical pressure,
" in lieu of the ordinary chemical sublimation, by which means,
" the use of ammonia is rendered sufficiently economical for gas
" purifying."

[Printed, 3d.]

A.D. 1854, September 14.—N° 2005.

EVANS, GEORGE FREDERICK, and EVANS, FREDERICK JOHN.—"Improved apparatus to be used in the distillation of
" coal and other bituminous or resinous substances."

These consist in coating earthen "retorts internally with an
" enamel or glaze, which will prevent the gas from escaping
" through the pores of the material of which the retort is com-
" posed, and will also, by presenting a smooth surface, prevent
" the carbon from adhering thereto and forming a crust thereon."
" Any of the processes which are well known and in use, or that
" may hereafter be invented, for glazing or enamelling surfaces,
" may be employed for the purpose of this invention."

" In order to prevent carbon from depositing and crusting on
" the internal surface of iron retorts, it is also proposed to en-
" amel these surfaces of iron retorts by any of the processes for
" enamelling hollow iron vessels." " If required, the external as

" well as the internal surface of earthen or iron retorts may be
" also glazed or enamelled."

[Printed, 8d.]

A.D. 1854, September 15.—N^o 2007.

PERKINS, JOHN WILLIAM.—“ Improvements in purifying gas, .
“ the residuum arising from which forms a new artificial manure.
These consist in “ preparing acid phosphate of lime, either from
“ bones, bone ash, coprolites, phospholites, or appalites, by com-
“ bining these ingredients, or any of them, or a mixture of any
“ two or more of them, with sulphuric acid of commerce and
“ water, in equal quantities, in the proportions of about an equal
“ quantity by weight of the above-mentioned materials of acid
“ and water, and afterwards adding thereto sulphate of iron or
“ oxide of iron, iron serap, iron turnings, or other iron refuse.”
“ Having thus prepared a mixture of any two or more of the
“ above-named ingredients, the whole of which are in a high state
“ of solubility and activity, then charge any ordinary dry lime gas
“ purifier with such said mixture. It has been found in practice
“ that the use and employment of the aforesaid mixture has the
“ effect of absorbing as nearly as may be the nitrogenous vapours
“ whilst in the nascent state, forming ammonia and the sulphur-
“ etted hydrogen gas, and of converting the phosphate of lime
“ into phosphate of ammonia, sulphate of ammonia, carbonate of
“ lime, and sulphuret of iron.” The residuum of this process
forms a new artificial manure resembling Peruvian guano.

[Printed, 3d.]

A.D. 1854, September 20.—N^o 2027.

ROBINSON, JAMES.—“ Improvements in apparatus for gene-
“ rating steam and gas, and consuming smoke.”

These may be effected by “ forming or constructing a compact
“ framework or apparatus, consisting of one, two, three, or more
“ tiers of fire-places, all the bars of the said tiers being fitted and
“ fastened to the front and back part of the said frame-work, the
“ whole of which are hollow, made of boiler plates or similar
“ material, forming one complete cellular apparatus. The coal or
“ other fuel is supplied to the top or upper tier, and the bars or
“ tubes are so arranged that the spaces between them are wider

" than in the next tier, and these are also wider than the spaces in " the tier below; so that the fire passing through the top or first " set of gratings will fall on and remain for a time on the second " set, and then fall through to the third, and so on. The air " necessary for combustion is also supplied at the top or upper " part of the apparatus above the fire, instead of under it, as here- " tofore, by which contrivance a downward draught or current is " obtained through the whole series of gratings, which causes the " smoke from the top or green fuel to pass through its own and " also through the red fires of the succeeding tiers of gratings, " whereby it will be consumed. The whole of the said apparatus " being hollow, and when used for generating steam is attached " to the boiler or vessel by one or more connecting tubes in such " a manner as to allow the water to circulate freely both through " boiler and apparatus, it is evident that the water in the said " apparatus will be heated and generate steam, as well as that in " the boiler; in fact, the hollow heating apparatus may be con- " sidered part of the boiler itself. By this arrangement a very " great heating or steam generating surface is obtained, and by " causing the smoke to descend through its own fire, and also " through the bright fires which have previously fallen on the " lower grates, it will be completely consumed." " When the " said apparatus is used for making or producing gas, a cover or " covers are fixed at one or both ends of the bars or tubes, and " thus form a series of gas retorts with pipes or suitable ap- " paratus to carry off the gas."

[Printed, 1s. 3d.]

A.D. 1854, September 23.—N° 2057.

DANRE, GEORGES.—“Improvements in gas-burners.”

These consist, first, in applying to gas burners, for the purpose of reflecting the light therefrom, reflectors with double backs through which at the same time the gas is caused to pass on its way to the burner, and thereby become heated. Such reflectors may be of any suitable shape or material, but in some cases the application of white and opaque porcelain for this purpose is claimed.

Second, in further heating the gas by causing it to enter and pass through a small chamber, situated immediately under the burner.

Third, in heating the air before it arrives at the burner, by causing it to pass through a cup, situated immediately underneath, and which is heated by radiation from the flame.

Fourth, in drilling the holes in the burner in such a manner that the flame will assume a flat form.

Fifth, in forming the glass chimney of an oval form, to correspond with the shape of the flame.

[Printed, 1s. 5d.]

A.D. 1854, September 26.—N° 2067.

BOULTON, JOSEPH.—“ Improvements in dry gas meters.”

These consist in “an arrangement of the valves and parts connected therewith, for giving motion thereto, and also the forming of the flexible diaphragms.”

The covers to the valves are connected to levers moving on a fixed centre, by which the covers are caused to move to and fro in the arc of a circle over the valve seats, no other guide being required. The vertical axis connected by arms to the diaphragms pass through stuffing boxes into an upper compartment, and there, through the intermediate action of suitable levers, links, and cranks, actuate the valve, covers, or slides over openings in the valve seat. These openings alternately admit the gas to the flexible chambers, and then allow it to flow into the upper compartment, and away to the burners. “The corner edges of the leathers [the flexible material] are connected together by sewing, the other edges are then turned over, and inserted into grooves formed upon the edges of the plate of the diaphragm, and also of the frame, which is attached to the vertical partition; these double edges are then firmly closed down upon the leathern or flexible material, so as to make a perfectly tight joint.”

[Printed, 1s. 6d.]

A.D. 1854, September 30.—N° 2100.

FILHON, GEMIS.—“ Improvements in glass chimneys for gas burners or lamps.”

These improvements consist “in having a contraction in the glass chimney [which is of the shape of an inverted truncated cone] corresponding with the upper end of the flame, or a little above this end, forming the contraction gradually, and immediately afterwards making the chimney again expand gradually

" in such a way that the contracted part forms only a circular
" line round the chimney, and not, as has already been done, a
" cylindrical contracted part of a certain height."

[Printed, 5d.]

A.D. 1854, October 13.—Nº 2187.

COWAN, HENRY, COWAN, JOHN, and COWAN, PHINEAS.—
(Provisional Protection refused.)—" Improvements in consuming
" and utilizing smoke."

It is "proposed to receive the smoke at its exit from furnaces,
" chimneys, and other vents, by an arrangement of tubes con-
" ducting such smoke to a vacuum or vacuums. The smoke
" will by these arrangements be prevented issuing into the atmo-
" sphere. Also to utilize the smoke collected for making illumi-
" nating gas and for other commercial purposes."

[Printed, 3d.]

A.D. 1854, October 16.—Nº 2212.

JOHNSON, JOHN HENRY.—(A communication.)—(Provisional
Protection only.)—" An improved apparatus for discovering the
" leakage or escape of gas."

" This invention consists in forcing a certain quantity of atmo-
" spheric air into the pipes and apparatus connected therewith by
" means of a force pump, the cocks of the burners and main
" cock being previously closed. A pressure gauge or indicator is
" attached to the pipes, to indicate the exact pressure within, and
" when any leakage is taking place it will at once be indicated by
" the pressure gauge and by the whistling of the out-rushing jet.
" A small safety valve is also fitted to the pipes, to regulate the
" amount of pressure within. The force pump before mentioned
" is also applicable for cleaning the pipes by forcing a liquid
" therein."

[Printed, 3d.]

A.D. 1854, October 21.—Nº 2249.

BRADE, ABRAHAM GERARD.—(A communication.)—(Provisional
Protection only.)—" Improvements in the manufacture of gas
" fittings."

These improvements consist in making the body of the fittings
in brass, iron, or any other suitable metal tubing in the ordinary

manner, and afterwards affixing to this tubing the ornaments. Suitable hollow moulds "are made to encompass the fittings, and "the space left is cast full of zinc or other metals."

[Printed, 3d.]

A.D. 1854, November 2.—N^o 2328.

DEWEY, LORING D.—(Partly a communication.)—(Provisional Protection only.)—“Protection against fire in vessels or buildings, by putting out the fire without personal aid, or with very little; and against incendiary or fraudulent fires and ravages of vermin.”

“The invention consists of so using and applying certain materials, mineral and vegetable combined, in appropriate construction, that an anti-combustive gas will be generated in burning, or water discharged, or both, to stop and put out the fire, though no agent is present but the fire itself.”

“The materials for this purpose are nitrates and sulphur, and cloth, paper, or the like integuments. Of these materials combined, whose ready burning produces anti-combustive gas in large quantities, are constructed tubes, cords, or parcels, of longer or shorter extent and varied size, to suit convenience in using and burning; which being prepared for application are kept in readiness for use, and so placed in vessels or buildings as that when a fire occurs it will be certain, sooner or later, to reach them, and before the fire has progressed far, to cause the gas to be generated, or water to be discharged, or both, if used, without the assistance of hands, or with very little aid. In construction, the minerals, nitrates, and sulphur, powdered and well mixed, about one-sixth nitrate to five-sixths sulphur, the nitrate of potash is preferred.”

[Printed, 3d.]

A.D. 1854, November 10.—N^o 2388.

JEAKS, WILLIAM.—“An improved mode of heating and ventilating by gas.”—(Provisional Protection only.)—“For this purpose a metal pipe is provided, to which is attached a series of parallel metal plates, set at any required distance apart. To this pipe is applied a gas burner for imparting heat thereto, which heat is taken up by and distributed over the series of plates. This apparatus” is “enclosed in a case,

“ which is open at top and bottom for the passage through of air,
 “ which air, by coming in contact with the heated plates, will
 “ become heated, and when allowed to escape into an apartment
 “ will diffuse the required amount of heat to the apartment. It
 “ will be obvious that [this apparatus may be used for drawing off
 “ vitiated air from buildings, a suitable provision being made for
 “ the admission of fresh air to supply the place of the current
 “ drawn off by the apparatus.”

[Printed, 3d.]

A.D. 1854, December 2.—N° 2539.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(A communication.)—“ Improvements in apparatus for the manufacture of combustible gas.”

These improvements consist, “ first, in the application of inverted covers dipping into [hydraulic tubes or cups for closing the mouths of retorts or other vessels used in the manufacture of combustible gas by the decomposition of water, steam, or aqueous vapour.”

“ Second, in the combination, arrangement, and application of a boiler and apparatus for supplying steam to retorts used in the manufacture of combustible water gas, substantially as in the manner herein-before described.”

“ Third, in the application of a piston or rammer to retorts or other close vessels used in the manufacture of combustible water gas, for the purpose of moving and agitating their contents.”

“ Fourth, in the combination, arrangement, and application of apparatus for the manufacture of combustible water gas in retorts having three mouths, two of which mouths serve for charging and discharging the matter used for the decomposition of the steam, and the third for agitating and moving the said matter.”

[Printed, 7d.]

A.D. 1854, December 8.—N° 2579.

AUBURY, GEORGE, and BRIDGES, WILLIAM RICHARD.—“ A portable apparatus for the manufacture and supply of gas.”

This “ invention, which has for its object the commodious and expeditious manufacture and supply of gas upon a small scale, for the purpose of burning in lamps, jets, stoves, grates, ovens,

" and furnaces, in houses and factories, in isolated localities, on shipboard, or under other conditions where no large stocks of gas are within reach for the purpose, consists in using for the said purposes a portable gas-producing retort, of such form and construction as to be conveniently fitted or adjusted to stoves or furnaces of the ordinary kind, in kitchens or dwelling apartments, as aforesaid, furnished with a gasometer and pipes in the usual manner, on a scale proportioned to the size of the retort, and with suitable contrivances for fixing the same in the required position, and for removing it when desirable."

[Printed, 7d.]

A.D. 1854, November 10.—Nº 2604.

STEVENS, JAMES.—" Improvements in the steps or bearings of the axles or shafts of gas meters."—(Provisional Protection only.)—These "improvements consist" in "employing non-metallic steps and bearings in gas-meters," made of "stones, or glass, or vitrified matter, and also in some cases of ivory or bone; in other respects, the construction of the bearings and steps of gas-meters is the same as heretofore."

[Printed, 2½d.]

A.D. 1854, December 12.—Nº 2612.

BACHHOFFNER, GEORGE HENRY.—" Improvements in the construction of fire-places, for the better consumption of smoke and in lighting and maintaining fires." To effect the first object of this invention, place within and above the ordinary fire-grate a moveable diaphragm, furnished with bars, in shape and character like an ordinary false grate or bottom, which, by rack motion or other means, may be raised up and down and sustained at any point; upon this place anthracite coal, coke, charcoal, or other non-bituminous fuel." This upper grate being then brought "close down upon ignited coals in the lower grate, the anthracite, coke, &c., will become ignited, and remain in an incandescent state, so that the smoke from the lower fire will be consumed as it passes through the incandescent mass above. When fresh coal is to be put on the lower fire, the upper one is raised for the purpose, and again lowered to the proper position. Instead of using two separate kinds of fuel, the coals in the lower grate, when sufficiently coked, may be lifted up with a shovel into the upper grate, and fresh coals added below."

Second, relates to a "gas poker," which "consists of a hollow tube of iron or other metal, shaped like a common poker, the lower end being perforated with holes; the upper end is furnished with a union, by which the iron tube or poker can, by a piece of flexible tube, be attached to a gas pipe, coming up in the usual way, at the side of the stove or fire-place. This gas poker is thrust into the fuel in the lower part of the grate, the gas turned on and ignited, by which the fuel is brought into rapid combustion, and when fully ignited, the gas poker is withdrawn."

[Printed, 10d.]

A.D. 1854, December 15.—N^o 2639.

ROWLEY, JOHN.—(Provisional Protection only.)—"Improvements in machinery or apparatus for embossing natural and artificial leather, and woollen, cotton, paper, silk, and other woven or felted fibrous materials; the said improvements being more particularly adapted to those machines in which heat is employed for effecting such said embossing."

So far as this invention relates to "gas," it consists in heating, by jets of gas, suitably disposed, the "sliding bed plate, so as to cause the heat from the lighted gas to impinge against the under side of the lower die holder, and thereby impart heat to the dies."

[Printed, 3d.]

1855.

A.D. 1855, January 3.—N^o 13.

DEHAYNIN, FELIX GABRIEL CÉLESTIN.—"Improvements in the purification of hydrogen gas."

These relate to the separation of "oxyd of carbon from hydrogen gas, that is obtained by the decomposition of water on charcoal, and by the distillation of peat, or in any other similar way; and to its use so purified for the purposes of "lighting and heating." The oxide of carbon so obtained, and freed from carbonic acid by the usual means, is passed over the "hydrated oxyds of soda, potash, barytes, or strontia" (which may be mixed with "slack lime") contained in a cylinder or vessel, and

“ heated to a high temperature.” If caustic soda be employed, it will be converted into carbonate of soda, which may be reduced to the caustic state by means of lime, and used again.

[Printed, 3d.]

A.D. 1855, January 9.—Nº 50.

SHIPLEY, SAMUEL SMITH.—“ Improvements in machinery and apparatus for washing or cleansing.”

These “improvements consist in the application of gas to machines or apparatus, for washing or cleansing linen, woollen, or other fabrics, materials, or articles for the purpose of keeping the water or ley used therein in a boiling state, or at a constant and uniform temperature, whilst the articles are being cleansed in the machine. Such machines may either consist of a revolving wash vessel or pan, with a perforated false bottom, upon which rests the articles being cleansed, and a number of beaters or stampers mounted therein; or may consist of a stationary outer case, upon the bottom of which the gas may act directly; or in a secondary degree, through the agency of any good transmitter of heat. And an inner revolving wash vessel, with any suitable arrangement of rubbers or beaters.”

[Printed, 7d.]

A.D. 1855, January 11.—Nº 78.

DAVIDS, SMITH WILLIAM.—“ Certain improvements in elongating chandeliers and gaseliers.”—(Provisional Protection only.)

“ This invention consists in substituting for the present water or slide apparatus, for raising and lowering chandeliers and gaseliers, an arrangement consisting of a coiled flexible tube, attached at one end to the supply pipe, and at the other to the head of the downward slide pipe of the chandelier or gaselier, balance weights being employed as in the ordinary manner. The tubing, when uncoiled, allows the gaselier to be at its extreme length, and when coiled, the chandelier or gaselier is, of course, at its shortest length, or nearest the ceiling. The coil being placed between the joists and above the ceiling, is hidden by the rose or other centre ornament, and is secured in its position by proper carriers from the joists.”

[Printed, 3d.]

A.D. 1855, January 27.—N^o 209.

ONION, WILLIAM.—“An improvement or improvements in
“gas stoves.”—(Provisional Protection only.)

This “invention consists in the use of clay, unglazed earthen-
“ware, or other unvitrified earthy matter, in the manufacture of
“gas stoves; the said unglazed and unvitrified matters possessing
“a radiating power not possessed by glazed or vitrified bodies.”

[Printed, 3d.]

A.D. 1855, February 3.—N^o 254.

CRANE, PATRICK MOIR.—“Improvements in the manufac-
ture of products from peat.”

These relate to the distillation of peat in furnaces, where a
“blast of air is used,” and consist “in having a separate chamber
“or compartment adjoining the furnace of combustion, for dis-
“tilling the peat and saving the charcoal.” The required heat is
generated in one furnace by means of peat, coke, anthracite, coal,
culm, &c., and the heated products of the combustion are passed
into an adjoining furnace, containing the peat to be distilled.
The gases arising from this distillation are passed on in the usual
manner to the condensers, &c.

[Printed, 5d.]

A.D. 1855, February 15.—N^o 346.

DELABARRE, CHRISTOPHE FRANCOIS.—“Improved appa-
ratus to be used in propelling gases and forcing fluids.”

This invention consists “in the use and employment of a mix-
ture of steam and air, or other gases, said mixture being obtained
and applied by projecting a relatively small and more or less
compressed current of steam or other attracting fluid into a large
single or multiple recipient pipe or channel, so as to give access
to, and cause the attraction of a considerable mass of air to be
carried along with the steam, &c., for the following purposes:—

“First, for causing draught in or blowing furnaces, either by
attraction, suction, or chimney blast, or else by direct blowing,
driving, or propulsion.

“Second, for heating and warming houses, water, steam cylin-
ders, &c.

" Third, for exhausting or extracting vapours from closed vessels, and deleterious gases from places in a low situation, and also forcing wholesome air into the same."

There are forty drawings attached to this specification, showing various modes of applying currents of air or gases, and fluids, for the purposes of obtaining motion, power, propelling, ventilation, suction, &c., &c. The Patentee proposes, among other applications, to use the power so obtained for the purpose "of carrying a gas from one place to another;" also to blow the fires of gas retorts, whereby "a high chimney stack" may be dispensed with; also to facilitate the "production of hydrogen from water" by insuring the proper admixture of the "carbonated gas" (see Specification and Drawing).

[Printed 1s. 3d.]

A.D. 1855, February 20.—Nº 367.

HULETT, DAVID.—(Partly a communication).—"Improvements in apparatus for heating, cooking, and lighting by gas."

These consist, first, in the use of "glass for the principal portion of the stove, in order to produce a stove more effective in use when applied to cooking and more ornamental in appearance." It is formed of an inner and outer casing, formed of sheets or plates of glass, suitably ornamented, and "cemented or otherwise fastened in a metal frame. The inner casing may be used either plain or covered upon the outer side with quicksilver or other metallic amalgam, or otherwise coated, in order to reflect the heat given off by the burner to the centre of the stove.

" Second, relates to" an improved burner adapted for use with the improved stove. "The burner" is "placed in the centre of the stove;" with a "conical metal cover or guard, to prevent the grease from getting into the holes of the burner, which is further protected by" another "cover, which may be made either of metal or earthenware; this cover prevents the fat, &c., which falls to the bottom of the stove from being burnt."

Third, relates to "various arrangements for raising, lowering, and adjusting gas burners, branched lights, and chandeliers."

And consist, first, in causing a ring placed round the sliding tube, and suspended by a cord or chain attached at one end to the inlet pipe, and at the other to a small lever connected to the ring, to "clip" the sliding tube, and so prevent it from moving.

Second, by means of "straight and curved tubes and swivel joints," or by means of "flexible tubes :" the weight of the sliding part being carried in both cases by counterpoise weights formed of elastic bags "filled with small shot, or other loose but heavy material."

Second, in making counterpoise weights hollow, and placing them on the side rods.

Third, in elevating or lowering chandeliers by means of chains passing round a roller, and worked by means of a ratchet wheel ; or by the rotation of spiral tubes.

Fourth, consists in substituting for the usual water joint a packing of "leather with some fibrous material saturated with oil ;" or by "a piece of vulcanized india rubber," closely fitting between flanges ; or by fitting the sliding tubes with "pistons."

[Printed, 1s. 2d.]

A.D. 1855, February 20.—Nº 369.

MEAD, CHARLES ROPER.—"An improved construction of gas regulator."

This is effected by the use of a "weighted diaphragm forming by preference the top of a chamber, into which the gas is conducted after it leaves the street main. Connected to the weighted diaphragm, the edges of which are secured to the metal case of the chamber by a suitable flexible medium, [by means of a rocking lever] is a conical valve, which commands the inlet pipe, and leading from the chamber is another pipe for conducting off the gas. When the pressure of the gas is excessive, the diaphragm will be forced upwards or outwards, and the capacity of the gas vessel will thus be greatly increased, and the valve moving with the diaphragm will throttle or close the inlet pipe, and thereby cut off or check the supply of gas ; but when the pressure of the gas is lower than required, the valve will fall and open the inlet pipe to its full extent. By " this " regulator, when the pressure of the gas is excessive," "it will act upon a comparatively large volume of gas (the capacity of the 'gas' vessel being greatly increased by the rising of the diaphragm), and thereby supply the required amount of gas to the burners without giving it out in pulsations, " which causes the flickering of light."

[Printed, 7d.]

A.D. 1855, February 21.—N° 377.

LAMING, RICHARD.—(Provisional Protection only.)—“An improved process for combining the purification of gas with the obtaining of certain valuable products.”

“ This invention consists in combining the following operations :—

“ First, bringing water or gas liquor obtained from the ‘ condensers,’ or other suitable liquid contained in a purifying vessel or vessels, in contact with a current of impure gas.”

“ Secondly, saturating the ammonia as it accumulates in the liquid with sulphuric or other desirable acid introduced to it under a bell or inverted cup, or other equivalent apparatus (which may be either placed in a purifying vessel, or form part thereof, or be otherwise in communication therewith).”

“ And thirdly, conveying away from the upper part of the said bell, or other equivalent apparatus, the hydro-sulphuric and carbonic acids by a conduit leading either to a furnace, where they may be economically disposed of, or to some other suitable locality. Any excess of hydro-sulphuric and carbonic acids over and above the portions removed by these means may be taken from the gas by other means efficacious for the purpose.”

[Printed, 3d.]

A.D. 1855, March 6.—N° 499.

BURR, ADAM JOHN.—“ Improvements in gas meters.”—(Provisional Protection only.)

These improvements consist in the adaptation of “cells,” inclosed in a suitable casing, for the purpose of measuring gas, the measuring being performed by the filling and emptying of the cells. The valves are “so constructed and worked that each valve establishes free communication, first and simultaneously between the *inlet* pipe and the *inside* of the cell, and between the *outside* of the cell and the *outlet* pipe; and, secondly, and also simultaneously, between the *inlet* pipe and the *outside* of the cell, and between the *inside* of the cell and the *outlet* pipe, and that the changes from the one condition to the other is effected in each of the valves by the motion of the opposite cell through the intervention of levers and a connecting rod; that motion when in an upward direction being due to the excess of pressure on the

" outside. This movement is transmitted from one of the cells " to the index by two pins or studs on the valve actuating rod " connected with it, which studs, as the rod moves to and fro, " actuate the tail of a short lever, which carries a pall at its upper " end, taking into the teeth of a ratchet wheel."

[Printed, 3d.]

A.D. 1855, March 17.—N° 600.

JOHNSON, JOHN HENRY.—" Improvements in the application " of carbonic acid gas as a motive power."—(A communication from Ghilliano, Joseph, and Cristin, Henri.)

The carbonic acid in this case, being condensed into a liquid, is introduced into a strong closed vessel, called the generator; it is contained in many tubes, closed at the bottom, but surrounded with water or other liquid, heated to the required degree. The liquid carbonic acid in consequence is evaporated, and its elastic force is made use of to work an engine resembling a steam engine. The carbonic acid gas so used is discharged into a coiled worm condenser, cooled by cold water, and thereby condensed again into a liquid. The liquid so formed may be returned to the " generator" by means of a pump.

[Printed, 10d.]

A.D. 1855, March 19.—N° 610.

SCULLY, VINCENT, and HEYWOOD, BENNETT JOHNS.—" An improved mode of regulating the supply of gas to gas " burners."

" The object of this invention is to prevent the waste of gas " caused by the turning of the ordinary tap-cock on to the full " on every occasion on which the burner is required to be used. " For this purpose the amount of gas that shall be delivered to " any particular burner" is controlled " by inserting out of sight " in the gas passage a regulator, which will limit the supply of " gas to what is really necessary to produce the requisite amount " of illumination for the time being at that burner without per- " manently reducing the illuminating capacity of the burner. " This regulator may consist of an ordinary tap-cock inserted in " the hollow joint or socket that carries the particular batwing, " argand, or other burner, whose illuminating power is required to

“ be controlled, and accessible only by means of a key provided
 “ for the purpose; or a screw, plug, or other similar contrivance,
 “ may be employed for determining the size of the orifice for the
 “ passage of gas to the burner, suitable means being adopted to
 “ prevent the plug being turned except by the application of a
 “ private key, which may be termed the adjusting key. From
 “ this explanation it will be understood that the means employed
 “ for carrying out this invention may be modified in various
 “ ways.”

[Printed, 5d.]

A.D. 1855, March 19.—N° 611.

TAYLOR, JAMES.—“ An improved means of consuming smoke
 “ in furnaces and fire-places.”—(Provisional Protection only.)

This “invention consists in supplying hydrogen and oxygen
 “ gases at a high temperature, by preference behind the bridge of
 “ the furnace, which gases combine with the smoke, the oxygen
 “ forming with the carbon carbonic acid, and the hydrogen car-
 “ burretted hydrogen. The best and most simple means of car-
 “ rying” this “invention into effect is, to pass a current of steam
 “ through red hot hollow bars, whereby the steam will be decom-
 “ posed and formed into oxygen and hydrogen gases, at such a
 “ degree of temperature as to produce ignition on coming in con-
 “ tact with the volatile part of the fuel.”

[Printed, 3d.]

A.D. 1855, March 23.—N° 643.

MORTON, HENRY JOSEPH.—(Provisional Protection only.)—
 “ Improvements in the construction of gas-holders or gaso-
 “ meters.”

These improvements “consist in the application of corrugated
 “ sheets of iron, zinc, copper, tin, galvanized iron, or galvanized
 “ tinned iron, or other suitable corrugated metal, for the purpose
 “ of forming and constructing gas-holders or gasometers (instead
 “ of the present mode of constructing them of plain or flat sheets
 “ of iron or other metal), whereby a considerable saving in weight
 “ and cost is effected.”

[Printed, 8d.]

A.D. 1855, April 25.—Nº 929.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(A communication.)—An improved gas regulator.

“ This invention consists of an inverted floating cup or vessel, “ upon ” the top of “ which the gas acts to control the opening of “ the induction or regulating valve, combined with the application “ to the said cup of an air spring, [air floats] or its equivalent, “ for the purpose of increasing and diminishing the resistance of “ the said cup to the pressure of the gas as the pressure in the “ pipe increases or diminishes, by reason of a less or greater con- “ sumption or otherwise, whereby a desirable and uniform pressure “ on the burners is at all times maintained.”

When the pressure in the main becomes excessive the inverted vessel, the under side of which is in communication with the air, becomes depressed and more or less closes the conical shaped inlet valve to which it is attached by a rod.

[Printed, 5d.]

A.D. 1855, April 30.—Nº 967.

JOHNSON, WILLIAM.—(A communication from Samuel W. Brown.)—“ Improvements in regulating the pressure or flow of “ gas or fluid bodies.”

“ According to one modification of the gas-regulating apparatus, “ the gas is admitted into a suitable vessel by a pipe or duct, “ which projects inside the vessel, and the mouth of which opens “ upwards or laterally, and has a weighted valve applied to it, “ tending always to close it. The induction pipe is formed at its “ mouth with a deep annular groove, which is partly filled with “ mercury, or with an amalgam of mercury and lead, and the “ rim of the valve, which is shaped like an inverted cup, is “ arranged to dip into this groove. The vessel in which the “ regulator valve is placed is furnished with a moveable cover, “ which can be raised by the internal pressure of the gas, but “ which is connected to the vessel by a liquid joint to prevent the “ escape of gas. This cover is loaded according to the pressure “ at which it is wished to maintain the gas, and it rests or presses “ down upon an arm formed upon the regulating valve, the valve “ piece being set upon a knife edge at a point between the valve “ and the end of the arm, in such a manner that, when the cover

" of the regulator vessel sinks, it causes the induction pipe to be
" further opened by tilting up the valve piece. When the burners
" are all shut off, and the gas has no egress, the valve becomes as
" far closed as it can be, but a small notch is made in the de-
" scending rim of the valve, so as always to allow a sufficient
" quantity of gas for one burner to pass through, so that there
" may be no difficulty in lighting the gas, and so setting the
" apparatus in action. All danger of the valve sticking to the
" mouth of the inlet pipe is avoided by the liquid connexion be-
" tween the two. According to another modification of these
" improvements, the valve piece is arranged to turn on a knife
" edge on one side of the inlet pipe, and is acted upon on the other
" side by a lever set upon a knife edge, and connected to the cover
" of the regulator vessel. The lever is so shaped and arranged, that
" when the valve is closed (all but the small orifice through which
" a supply of gas for a single burner can pass), and when it is
" most liable to stick, from the deposition of gas tar at the mouth
" of the inlet pipe, it is acted upon by a projection on the lever
" very near its centre of motion, so as to have sufficient lifting
" power upon the valve, whilst when the valve is opened a short
" distance it is acted upon by a projection on the lever at a greater
" distance from its centre of motion, and is thereby prevented
" from being unsteady in its action, as it would be, were the lever
" to act with as much power throughout as when the valve is
" nearly closed. According to a third modification, the lever and
" valve piece are both formed with weights, situated some distance
" above the knife edges on which they turn, so as to quicken and
" intensify their movements when they are turned to either side.
" In addition to this, the valve is connected to a small piston
" which fits loosely in a vessel nearly filled with water or other
" liquid, and by the resisting action of the water prevents the
" valve from moving too quickly or suddenly."

[Printed, 9d.]

A.D. 1855, May 3.—Nº 989.

BASFORD, WILLIAM.—(Provisional Protection only.)—" Im-
" provements in purifying coal coal, and for obtaining a residuum
" therefrom, which may be used as a pigment or color, or for other
" useful purposes."

" This invention has reference to an improved method of puri-
" fying coal gas, by charging a chest or vessel with charcoal, peat,

" or other like substances, and heating the same, and causing the
" gas after it leaves the retort to pass through the said chest or
" vessel heated and charged as aforesaid, by which process the gas
" is freed from noxious matters, becomes more pure, and contains
" greater illuminating power than gas purified in the ordinary
" way; and at the same time a residuum is left that may be
" used as a pigment or color, or for other useful purposes."

[Printed, 3d.]

A.D. 1855, May 21.—N° 1134.

PIGGOTT, THOMAS.—"Improvements in telescopic gas holders."

These consist "in locking together and unlocking [by self-
" acting apparatus] the separate parts or lifts of telescopic gas
" holders, the said locking being effected on each of the said
" parts or lifts as the same is about to be raised from the tank,
" and effecting its fixed connection with the part which had pre-
" viously been raised, and the said unlocking being effected in an
" inverse order to that of the locking; the said locking and
" unlocking being effected by mechanism brought into action by
" the motion of the gas holder." The principle of this invention
may be carried out in various manners. In the specification are
given five modes. By one mode there is a shoot bolt placed on
the top edge of the outer sliding portion of the gas-holder, which
is made to shoot into a staple on the inner sliding portion by
means of an anti-friction pulley, acted on by an inclined plane
fixed on the edge of the tank. This takes place at the desired
point of elevation of the gasometers; and on the other hand at
the desired point, while the gasometers are lowering, the anti-friction
pulley is acted on in an outward manner, thereby withdrawing the
bolt and setting the two portions of the gasometer at liberty, by
a wedge sliding on the outer portion of the gas-holder, and acted
on by a stop also attached to the edge of the tank.

[Printed, 7d.]

A.D. 1855, May 24.—N° 1166.

SMITH, WILLIAM, and TAYLOR, NATHANIEL FORTESCUE.—
" Improvements in meters for measuring gas and other fluids."

" These improvements relate, first, to forming the valves and
" valve seats of meters for measuring gas, so that each valve cover
" in action has a partial rotary motion on its seat, and in forming

" the seat (for two measuring compartments of the meter) with
" four passages or ways of two unequal sizes, whilst each valve
" cover is formed with two compartments and two blanks; the
" two compartments in the valve cover correspond in dimensions
" with the two larger passages, and the two blanks with the two
" smaller passages of the valve seat. Supposing the larger pas-
" sages in the valve seat to be those employed to conduct the
" gas to and from the valve, the two smaller passages will then
" be employed to conduct the gas to or from the measuring com-
" partments, and the valve in its partial rotary motion will alter-
" nately open those for the passage of the gas to and from the
" measuring compartments.

" The improvements relate, secondly, to a mode of arranging
" an indicator for indicating the level of the water in water gas
" meters. The end of a lever passes through a slot on the top of
" the float, or is otherwise connected to it, whilst the other end of
" the lever is attached to an axis, which axis also carries a pointer,
" to indicate upon a scale any variation from the mean level of
" the water in the meter. The axis of the lever arm and pointer
" is supported in suitable bearings, and passes through an hori-
" zontal stuffing box, to prevent the escape of gas from the
" interior of the meter.

" Thirdly, the improvements relate to meters for measuring
" water or other fluid. In this case the valves are semi-rotary,
" and each admits the water or other fluid alternately to and
" from two measuring compartments; and although we have
" shown only one pair of measuring compartments, we sometimes
" employ in each meter two valves and two pairs of measuring
" compartments. The valve covers are supported in chambers in
" connection with the pipe of supply, whereby the pressure of the
" fluid to be measured will tend to keep the valve covers to their
" seats. Each valve cover is formed with a passage through it for
" the supply, and with a chamber to conduct the fluid alternately
" from one or other measuring compartment through in the valve
" seat when measured. The passages for the fluid away from the
" measuring part of the meter are all inclined upwards, to avoid
" accumulations of air. The partial rotation of the valve is
" obtained from the movements of the partitions or diaphragms
" between each pair of measuring chambers. The partitions and
" discs of the measuring compartments are formed of tinned iron
" or other suitable metals, and the materials intended to be used

" for the flexible part of the measuring chambers may be any such
" of a waterproof nature suitable for the purpose.

" Fourthly, the improvements consist in forming the inlet and
" outlet pipes, with the screws and flanges thereof, as also the
" valve box with its parts, as applied to meters for measuring gas
" and other fluids, of cast malleable iron."

[Printed, 9d.]

A.D. 1855, May 28.—Nº 1210.

ROWLANDS, SAMUEL.—(A communication.)—“ An instrument
“ or apparatus to be used for purifying or otherwise treating
“ gas,” consisting of “ an apparatus in which the gas to be treated
“ is made to pass through a long spiral channel made in a float
“ floating on the liquid to which the gas is to be exposed, the said
“ float being so disposed as to be susceptible of a rotary motion
“ by the passage through it of the gas.” A spiral strip of metal
is coiled upon the float, which may be made of cork, and a metal
plate is placed on the coil, and thereby completing a spiral channel.
The float so furnished is floated in a closed vessel containing the
liquid required to act on the gas, (such as naphtha for the purpose
of enriching it, or other liquids for the purpose of purifying it,) and the gas is then passed through a suitable pipe into the spiral
channel at the centre, and flowing round makes its escape at the
periphery into the main vessel, from which it may be conducted
by a pipe to the burners. Suitable openings are made in the
under side of the float to admit the liquid used into the spiral
channel. The motion of the gas will produce a rotary movement
in the float.

[Printed, 6d.]

A.D. 1855, May 28.—Nº 1221.

GRAFTON, HENRY.—“ Improvements in apparatus for heating
“ and cooking.”

This “ invention consists in the application of earthenware in
“ moulded forms as chambers [of any suitable shape] in which
“ to generate and enclose the heat for the purposes of cooking,
“ either by inserting the articles to be cooked therein, or by
“ placing the vessels containing edibles in such moulded cham-
“ ber.” The “ cooking stoves are moulded somewhat in the
“ manner of a common earthern pot or pipe, and making an inner

" projecting rib round the bottom with a hollow channel for gas,
 " and numerous jet apertures for the escape and ignition of gas.
 " Instead of making the earthen chamber in one piece with the
 " burner, the earthen burner may be made separate, and con-
 " stitute a foot or pedestal for various sized earthen chambers
 " which are placed thereon, and enclose the several gas emission
 " apertures. Passages are made through this foot for the admis-
 " sion of air to support the combustion."

The drawings show several modes of applying these moulded chambers to the purposes of cooking and heating.

[Printed, 7d.]

A.D. 1855, May 29.—N° 1225.

LAFOND, ETIENNE JULES, and DE CHATAUVILLARD, Count LOUIS ALFRED.—“ Improvements in the processes of and apparatus for treating mineral, animal, and vegetable matters for obtaining oils, essences, paraffine, and other similar products.”

These relate to “apparatus for carbonising and distilling animal, vegetable, and mineral substances [more particularly turf] for obtaining oils, essences, paraffine, and other similar products,” and consists, firstly, of a “retort,” suitably mounted in a furnace, and furnished with an inner retort, into which is placed the material to be “carbonized.” This inner retort is perforated by numerous holes “for the passage of liquid substances,” and the outer retort is provided with two pipes, the one to draw off said liquids, and the other for the emission of the gas produced. The gas so produced is passed through two condensers, and into a small gasometer resembling an engine cylinder, where it may be compressed by a piston if desired.

Secondly, of a still and condensers “to separate and rectify the various products obtained by the above described process, such apparatus being suitably provided with a furnace, piping, taps, coolers, and tanks.”

Thirdly, of stills to distil the products obtained under the second head. These may consist of a retort placed vertically, provided with two exit pipes, the higher one to draw off the lighter vapours, and the lower one “to give passage to the liquids which are too heavy to ascend to the higher one;” or the retort may be placed horizontally and the heat of the furnace carried completely round it, whereby all condensation will be prevented.

Fourthly, consists of a still or retort, provided with three or more draw-off pipes for vapours of different densities.

[Printed, 1s. 11d.]

A.D. 1855, June 9.—N° 1316.

LAFOND, ETIENNE JULES, and DE CHATAUVILLARD, Count LOUIS ALFRED.—“Improvements in apparatus for “lighting.”

This invention consists, first, in various forms of “apparatus “by which the gas or vapour produced from any inflammable “liquid is self-generated” and burned advantageously. “Secondly, in improved arrangements for purifying the said vapor “or other inflammable matter. And, thirdly, in the construction “of burners or apparatus by which the air is admitted to the “vapour or gas in order to insure perfect combustion.” The inflammable liquid may be “self generated” into gas by means of a “metallic capsule or heater producing the vapours which feed “the burner.” Gas may be “purified” by passing it through “a solution of quick lime, whiting, and tartaric acid” contained in a small chamber in the burner, and also by the proper admixture of air. The drawings attached to the specification show several modifications of lamps and burners suitable for the combustion of gas, and of vapours of inflammable liquids applicable for domestic purposes, for street lamps, lighthouses, &c.

[Printed, 1s. 6d.]

A.D. 1855, June 9.—N° 1317.

TEAGUE, HENRY.—“Improvements in high and low pressure “meters for water, gas, or any other fluid.”—(Provisional Protection only.)

“This invention consists in placing between two hemispherical “segments an elastic diaphragm, composed of india-rubber or any “other suitable elastic material. When the two hemispherical “segments are bolted together with the diaphragm between them, “they form a spherical chamber or vessel, into which chamber the “water, gas, or fluid to be measured is admitted, and discharged “by a four-way cock or cocks, slide or valve. This cock is connected with a weight attached to a fork, which is actuated by a rod working through a stuffing box in the spherical vessel and “connected with the diaphragm. This rod raises and carries the

" weight on the cock beyond a vertical position, when it falls by its own gravity and reverses the position of the cock, thus admitting the fluid alternately on each side of the diaphragm. This same rod also works a register, which indicates the quantity of fluid that passes through the meter."

[Printed, 3d.]

A.D. 1855, June 13.—Nº 1356.

LODGE, EDWIN, and MARSHALL, GEORGE.—(Provisional Protection only.)—"Improvements in the production of animal and vegetable naptha, ammonia, and charcoal, and also for the evolution of the carburetted and olefiant gases therefrom."

" This invention consists in employing the refuse or waste of wool and cotton, otherwise almost useless, (being the residue of the divers fabrics or other materials manufactured from these substances,) in and for the production of animal and vegetable naptha, ammonia, and charcoal, and also for the evolution of the carburetted and olefiant gases therefrom, and the conversion and application of such said gases to the purposes of lighting houses, manufactories, &c. &c."

[Printed, 3d.]

A.D. 1855, June 20.—Nº 1405.

HOLMES, WILLIAM CARTWRIGHT.—" Improvements in the manufacture of gas and in apparatus employed therein."

These improvements consist, "firstly, in the introduction into a retort or carbonising vessel of a flue or draft tube, made or cast separately from the retort, and also the insertion of shelves or diaphragms, either horizontal or vertical, made or cast separate from the retort, and made to fit loose in the interior."

" Secondly, in combining the air condenser, wash vessel, coke vessel, or scrubber and purifier in one vessel or case," [thereby insuring a degree of compactness and simplicity unattainable in disconnected apparatus] "and in changing the lime or other purifying agent of one part of the purifier of combined apparatus whilst the other is working."

" Thirdly, the arrangement of self-acting (hydraulic) valves for dispensing with the present hydraulic main." This may be closed by a "cup" inverted over the mouth of the inlet pipe, and opened by a spring in water.

" And, fourthly, the distilling of coal, peat, oil, resin, and other " gas-producing substances, by means of super-heated steam, for " the purposes of illumination. Steam on being generated in a " boiler is made to pass through a coil of pipes, which are pre- " viously heated to a bright red heat, and from which it receives " an increase of temperature corresponding to the area of the coil; " from thence it passes into a retort containing the substance to " be distilled, which it gradually increases in temperature until all " its resolvable parts vaporize and pass off with the steam into " and through a second retort or vessel, the hot surface of which " completely converts the remaining particles of hydro-carbons " into inflammable gas. The steam also being here decomposed adds its hydrogen, and increases the production of gas."

[Printed, 10d.]

A.D. 1855, June 20.—N° 1414.

COCHAUD, ELISE.—“Apparatus to be used in making aerated “ or gaseous liquids.”

The gas generator may consist of a “cylindrical or any other “ suitably formed vessel supported by a framing.” The inside of this vessel is divided into two parts by a partition, and fixed under the lid is “a box containing water for the purpose of “ purifying the generated gas.” The lid is provided with suitable openings for the admission of the materials employed, for the emission of the gas safety valve, &c. The vessel is provided with suitable agitation. After the gas has passed the water purifier it may be conducted directly to the bottles. Or the arrangement may consist of a double apparatus, the gas being generated in one apparatus, passed through a separate purifier, and into a third vessel containing the water to be saturated. The bottles are afterwards filled with water thus gasified, through an orifice and by means of a treadle.

[Printed, 7d.]

A.D. 1855, June 21.—N° 1423.

BEN' JAMIN, JACOB.—(A communication from Henri Leprince.) —“Improvements in apparatus for the manufacture of gas.”

These consists “firstly, in constructing a retort for the ma- “ nufacture of gas, with three compartments, communicating “ together, so as to form one continuous passage, and having a

" lid or lids for charging and discharging, and a pipe adapted for " the introduction of water or steam." " By constructing a " retort in three compartments the difficulty is avoided which " would arise in maintaining the joints or connections if three " separate retorts were employed, owing to variations in the ex- " pansion and contraction of the different retorts. The retort " may have more than three compartments if desired, but three " are sufficient for the purpose."

" Secondly, the combination of a syphon pipe with a retort for " the manufacture of gas constructed with three compartments, " communicating together." In consequence of its syphon shape the water may be introduced without an escape of gas.

[Printed, 6d.]

A.D. 1855, June 21.—N^o 1428.

YOUNG, LUTHER.—" An improvement in the construction of " gas regulators."

The object of "this invention is to facilitate the dip of " the floating drum [inverted vessel] of gas regulators into the " mercurial joint. In order to effect this, a counterpoise to the " resistance which the mercury offers to the descending drum" is provided, "by making the rod or lever, which connects the " floating drum with the regulating valve, hollow, and inserting " therein mercury, or its equivalent, which, as the ascending " current of gas lifts the valve from its seat, will cause the hollow " rod or lever to rock, and the mercury to flow towards the " depressed end. The mercury, by thus accumulating at one " end of the hollow connecting lever, will virtually increase the " weight of the floating drum, and thus enable it to overcome " more easily the resistance which the mercurial joint creates to " the downward movement of the drum. Or, instead of this " arrangement, the mercury that is to form the counterpoise" is put "in a vibrating tube or tubes, mounted above the " drum, which will have the same effect in overcoming the " resistance caused by the mercurial joint, by pressing down the " drum, instead of drawing it down, as above described."

[Printed, 6d.]

A.D. 1855, June 28.—N° 1480.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(A communication.)—“ Improvements in manufacturing, lighting, and “ heating gases.”

This invention consists, “ first, in generating carburetted hydrogen, by throwing at once a large quantity of coal into a well closed furnace [or cupola], which contains incandescent coke.”

“ Second, by continually dropping into the furnace [or cupola], “ and through a suitable aperture, a jet of coal powder from a “ chamber, which is supplied with the same by means of a funnel “ and a cock, adapted to it for this purpose.”

“ Third, by letting a jet of steam saturated with tar, or any other “ hydro-carburet, down through a layer of incandescent coke.”

“ Fourth, manufacturing hydrogen gas, by letting pure or “ hydro-carburetted steam through the smelted iron, which is thus “ transformed into iron of superior quality, or into steel.”

[Printed, 1s.]

A.D. 1855, July 16.—N° 1593.

PASCAL, JEAN BAPTISTE.—“ Certain improvements in obtaining motive power.”

This invention consists, “ first, in a system of generating apparatus hermetically closed, and in which combustion is effected “ by means of air, blown either from beneath or from above the “ fuel [or both], whatever may be the nature of the fuel, and “ whatever may be the pressure existing in the generators.”

Second, “ in producing inside the apparatus a mixture heated ” to “ a high temperature, and consisting of air, steam, and the “ gaseous products of combustion, in generating and super- “ heating the steam necessary to the mixture, by bringing it in “ contact with surfaces especially constructed for this purpose, “ and with superheated gases, which are generated under the “ pressure of the mixture.”

Third, “ in constructing vaporizing surfaces with metal substances connected to each other, so as they may dilate independently of one another, and thereby break the incrustations “ or sediments caused by the evaporating of water.”

Fourth, “ in causing the said expansive mixture, raised to a “ high temperature, to act as motive power, in those parts of the “ steam engine fitted for this purpose.”

Fifth, "in distributing and varying at will, and without interrupting the work of the apparatus, such quantity of water as is necessary to generate the steam of the mixture, and, consequently, modify its proportions."

Sixth, "in causing water to drop by very small particles on the vaporising surfaces, through a capillary issue contrived round the apparatus, and of so little capaciousness as to allow a continuous current, which prevents all sediments, and leaves, as soon as the feeding ceases, the generator deprived of water."

This apparatus for obtaining "motive power," consists, generally, of a fire-place, placed within a cylinder or furnace, capable of being closed tight, and of resisting the required pressure. The air which supports combustion is forced in by a suitable blowing apparatus, partly into the ash-pit, where it passes through the bars and ignited fuel, and partly above the fire, where it burns the combustible gases escaped from the fire. The water is introduced into a narrow channel surrounding the furnace, where it is brought to the boil, and is then converted into steam, by being projected upon a red-hot plate, placed over the fire. Suitable means are adopted for regulating the quantity of water supplied, as also the quantity of air supplied above and below the fire. Suitable openings are also provided for supplying fresh fuel, for removing the ashes, &c. The hot products of combustion are reduced in temperature and expanded in bulk by means of the steam, and the mixture of the two is carried by piping and applied to an engine, or in any other suitable manner, where motive power may be required.

[Printed, 2s. 1d.]

A.D. 1855, July 18.—N^o 1617.

POLLARD, JAMES.—(Provisional Protection only.)—"Improvements in the manufacture of gas."

"This invention has for its object the use of peculiarly formed retorts and apparatus for making gas. For this purpose each retort is made with a return bend, proceeding from the back end of the retort to the front end, such return bend being above the retort. The front end of the retort is made with an incline, in a direction from front to back, and the front end is covered with a cover or lid, as is the case with other retorts; and the front end of the return bend is also made to receive a cover or

“ lid. In the return bend, or upper limb of the retort, are placed
“ moveable perforated partitions, which are, from time to time,
“ drawn out to cleanse the retort. The rising pipe is applied to
“ the front end of the upper limb of the retort.”

[Printed, 3d.]

A.D. 1855, July 24.—N° 1674.

STENT, HENRY.—“ Improvements in the construction of apparatus for measuring gas and other fluids.”

“ This invention relates to certain improvements in the construction and mechanical arrangements of the common wet gas meter, and consists,

“ First,” in “ making the external case, by means of stamping from sheet iron or other metal, two circular hollow bodies, and uniting the edges together by a lap joint, forming a close hollow cylinder. The foot on which the case stands is also stamped from sheet iron, or other metal, and attached to the case by soldering, thus reducing the number of pieces required.

“ Secondly, in coating the surfaces of sheet iron, or other metal employed in the construction of gas meters, with an alloy of tin and antimony, which protects them from corrosion.

“ Thirdly, in substituting for the usual mode of transmitting motion, from the measuring drum to the registering mechanism, by endless screw and toothed wheel, an eccentric cylinder or crank pin fixed to the drum shaft, which, revolving between guides at the ‘lower’ end of an upright pendulum rod, actuates ‘the registering mechanism,’ through two spring palls and a horizontal ratchet wheel.

“ Fourthly, in causing the valve, that regulates the admission of gas to the meters, to open outside the valve box, thereby avoiding the occasional sudden closing of the valve, and consequent extinguishing of the lights, and also preventing the valve from adhering to its seat when closed.”

“ Fifthly, in fixing a cap on the top of the pendulum rod, and inverted over the spindle tube, to protect the registering mechanism from corrosion.”

“ Sixthly, in casting the siphon and dry well, that conveys the gas into the measuring drum in one entire body, which, in the usual construction, is composed of several pieces of material.”

[Printed, 1s. 1d.]

A.D. 1855, July 26.—N^o 1693.

SCHIELE, CHRISTIAN.—“Improvements in obtaining and “applying motive power.”

These relate chiefly to improvements on the “rotatory steam engine;” to the mode of “constructing contact wheels for conveying motive power;” to indicators, &c. (See Abridgments on these subjects.)

Eleventh, “the system or mode of evacuating, propelling, or “discharging air or other gas, by combining and intermixing it “with water, or other heavy fluid, in its passage through a fan or “centrifugal pump.” The fan used for this purpose is constructed in preference, “according to Platt and Schiele’s patent.” The required quantity of water is introduced by the central tube; and getting mixed in the fan with the air or gas, propels it forward by means of its weight and momentum.

[Printed, 1s. 2d.]

A.D. 1855, August 3.—N^o 1766.

JOHNSON, JOHN HENRY.—(Provisional Protection only.)—(A communication from Mathieu Léon Pujol.)—“Improvements “in the purification of gas for illuminating purposes, by “separating therefrom the carbonic oxide, and in the application “of such carbonic oxide to heating purposes.”

“Charcoal is placed in suitable receptacles, and is, before being “used, perfectly freed from air, which may be effected, either by “heating the receptacles, and allowing the air to escape through “a stop-cock, and then closing the cock and cooling the vessel, “or the air may be exhausted by an ordinary air-pump, or other “suitable exhauster. The gas to be purified is passed over or “through this charcoal, which takes up or absorbs the whole of “the carbonic oxide. When completely charged, the oxide may “be removed from the charcoal, and allowed to enter a suitable “gasometer, by the same means adopted for expelling or ex- “tracting the air herein-before described. This carbonic oxide “so collected and separated from the illuminating gas, may then “be used for heating purposes generally.”

[Printed, 3d.]

A.D. 1855, August 10.—N^o 1811.

LANCASTER, WILLIAM HENRY, and SMITH, JAMES.—
“ Certain improvements in the manufacture of gas, for illuminating, heating, and other purposes.”

These “improvements consist in introducing into an ordinary gas retort, a certain quantity of charcoal along with the coal therein, [or coal alone], and in [pouring water or] admitting steam into such said retort, during the process of distillation, by which decomposition of the coal and water is effected simultaneously in such said retort, and by these means gas is produced of better quality and in larger quantity, than could be obtained from the same quantity of coal by the means heretofore employed for manufacturing gas.”

[Printed, 7d.]

A.D. 1855, August 14.—N^o 1841.

SANDERS, GILBERT, and DONOVAN, RICHARD EDWARD.—
“ Improvements in maintaining the level of the water or other liquid in gas meters and steam boilers, and regulating or controlling the action of such apparatus.”

This “invention relates to the maintaining the level of the water or other liquid in gas meters and steam boilers, and regulating or controlling the action of such apparatus by means of one or more floats, or compensators of peculiar construction, that is to say:—A solid or hollow body, capable of revolving on an axis, and so loaded or balanced that it shall sink into the liquid only in proportion as the liquid is withdrawn by evaporation or otherwise, and shall rise above the level of the liquid in proportion as liquid is added, thus maintaining a constant liquid level, notwithstanding the abstraction or addition of liquid from or to the vessel, in which the compensator or float is placed; but, as a matter of course, the compensator will be effective only to the extent of its own volume. Many varieties of form may be employed for the compensator,” but the Patentees “prefer to employ a portion either of a sphere or a cylinder; and of these the most effective are the hemisphere and semi-cylinder. The abstraction of too much water from the meter is prevented, “by fixing a valve on the end of the flat side of the compensator, which will come against the end of the

" exit pipe " suitably placed, " and shut off the gas, when too much water has been removed by evaporation or otherwise. To prevent the addition of too much water, we fix a pin on the compensator, projecting across the drum. The crank on the upper part of the bar allows this pin to pass. On the drum is fixed a catch which will strike the pin, whenever it falls on the circle of rotation of the catch, and as the pin and the catch revolve round different centres, they can meet only in two places, as will be seen by references to Figures 5 and 6. The extent of motion of the compensator is so adjusted, that when it approaches its highest position," it "comes in contact with the pin, and is arrested by it; or, if the gas has sufficient power, it carries the compensator a little farther, until it is arrested by a stop fixed to the meter case. The supply of gas is thus stopped. Wet gas meters provided with " this " compensator, and " with a bent pipe," with one or more " open arms stretching across the front box, are protected from fraud by what is termed 'tilting,' either backwards, or forwards, or diagonally."

[Printed, 8d.]

A.D. 1855, August 17.—N° 1872.

EDGE, THOMAS.—"An improvement in the manufacture of gas meters, and other articles for containing and supplying gas."—(Provisional Protection only.)

"The object of this invention is to prevent or retard the corrosive action of those metal surfaces of gas meters, gas regulators, and other articles which are exposed to, or brought into contact with gas." For this purpose, "the use of the metal known as aluminum" is proposed, "either alone or in combination with other metals, forming (by means of the plating process, or otherwise,) those surfaces which are to be exposed to the gas."

[Printed, 3d.]

A.D. 1855, August 27.—N° 1943.

ESPLIN, CHARLES.—"Improvements in apparatus for regulating the supply of gas."

The valve for "regulating the passage of the gas, between the inlet and the outlet chambers or compartments of the apparatus, is carried by a cover [an inverted vessel] with turned down edges, which enter a trough containing a fluid (by preference

“ quicksilver), and this cover moves on points or axes at one end, “ such points or axes being below the fluid. And in order to “ compensate for the varying quantity of the edges of the cover, “ which is from time to time immersed in the fluid, a tube con- “ taining fluid (by preference quicksilver), is fixed on the move- “ able cover of the apparatus [on the top of the inverted vessel], “ in such manner that the fluid in the tube is, for the most part “ at the end of the tube, most distant from the axis of motion of “ the cover, when the valve is required to be most opened, and so “ that the fluid in the tube may flow more and more towards the “ axis of motion, as the valve is more and more closed by the “ lifting of the cover, by the pressure of the gas in the apparatus.”

[Printed, 5d.]

A.D. 1855, September 1.—N° 1973.

DODDS, THOMAS.—“ Improvements in the construction of an “ apparatus, for heating all kinds of furnaces with coal or other “ gases.”—(Provisional Protection only.)

These consist of an arrangement of iron doors, plates, pipes, valves, &c.

[Printed, 5d.]

A.D. 1855, September 1.—N° 1978.

BENTLEY, THOMAS.—“ Improvements in apparatus for heating “ water or other fluids by gas.”—(Provisional Protection only.)

“ This invention has for its object the construction of a portable “ apparatus for heating water or other fluids by gas in such “ manner that the apparatus may be immersed in the vessel con- “ taining the fluid to be heated; and when the desired heat has “ been obtained, the heater may be removed. For this purpose, a “ gas burner or burners is fixed in a vessel, by preference of a “ conical form at its lower parts. This vessel is closed at bottom, “ and has a descending tube or tubes to convey air to the burner “ or burners, and an ascending tube or chimney, to carry off the “ products of combustion.”

[Printed, 3d.]

A.D. 1855, September 1.—N° 1979.

NEWTON, ALFRED VINCENT.—(A communication.)—“ Im- “ provements in the manufacture of gas for illumination.”

THE MANUFACTURE OF GAS.

These consist in causing to mix or combine the gases derived from the destructive distillation of peat, and Trinidad or Barbadoes pitch, or the solid bitumen found in Nova Scotia, New Brunswick, or boghead coal, schistus, &c. For this purpose the peat is heated in a separate retort, or in a separate portion of the same retort, from that of the more highly bituminous substance. The poor gases from the peat become enriched by being passed over the bituminous substance while undergoing distillation.

[Printed, 7d.]

A.D. 1855, September 3.—N° 1992.

GILBEE, WILLIAM ARMAND.—(A communication from Monsieur Salmon.)—“ Improvements in the production of carburetted hydrogen gas.”

These relate to a combination of coke ovens and retorts for the production of gas and coke by one operation, and may consist of an arrangement of three coke ovens placed side by side, but with a space between each, having over each a set of three retorts, and over the spaces each three smaller ovens. The heat disengaged from the coke ovens first heats the retorts, and afterwards the small ovens above. Into these small ovens may be put resin, tar, or similar substance, and the gas and vapours arising therefrom are caused to pass through the retorts, which may be supplied with coal, tar, &c., and thence to the purifier and gasometer.

[Printed, 10d.]

A.D. 1855, September 11.—N° 2059.

BOUCHARD, ETIENNE CHARLES ZACHARIE.—“ Improvements in producing gas for lighting and heating.”

These consist “in arrangements of apparatus for generating gas from coal, and for employing the waste heat from the fuel used in the distillation thereof to generate steam and hydro carburetted gases, and in the mixing of one or both of these agents with coal gas at the time of its production.” In this arrangement the coal or coke being placed in a closed furnace or coke oven is heated and distilled by means of the admission of a regulated quantity of air into the interior of the oven. The smoke or gases produced may, by means of a pipe, be conducted first into a chamber in which is placed a worm pipe containing water to be heated, and, secondly, under a boiler which contains liquid

hydrocarburets ; or steam may be introduced into the oven, when the coke has reached the desired temperature, along with a fresh supply of fuel, the air tube being at the same time shut off, and in this case the resulting gases are conducted by pipes to the purifiers. "The qualities and nature of the gases may be varied " by shutting off communication between the steam pipe and " vessel containing the hydrocarburets."

[Printed, 1s. 1d.]

A.D. 1855, September 13.—N° 2071.

LONGBOTTOM, ABRAM.—"Improvements in the manufacture " of gas when oils or fatty matters are used."

"These improvements consist in constructing retorts used for " this purpose with a projection at the bottom, convex inwards " and concave on the outside. This retort is of the form of a " truncated cone, and the bottom is at the smaller end ; it is " heated at the bottom by a fire. The oil or fatty matter is sup- " plied through a tube, which descends through an inner perforated " false bottom of the retort, and the oil or fat falls on the inner " surface of the convex projection above mentioned, and is " vaporized, and the vapours pass through the perforated false " bottom, and amongst a heated mass of charcoal and lime " mixed together [placed over the false bottom,] and then out of " the retort for use. The retorts, in place of being cast of " ordinary cast-iron, are cast of malleable cast-iron, and then " annealed, by which it will be found that a retort will last longer " and be more effective when in use."

[Printed, 8d.]

A.D. 1855, September 28.—N° 2163.

JOHNSON, RICHARD LOCKE.—"Improvements in the manu- " facture of gas for illumination from peat or other substances, " and in the apparatus employed in such manufacture."

These relate to a form of retort for the distilling of any material suitable for making gas. The retort is fitted up internally with shelves, and the material to be distilled is placed on the bottom of the retort or on the shelves ; and the shelves being made of less length than the retort the gas produced has in consequence to pass from one end of the retort to the other before it escapes ; over the shelves is placed a grating, on which charcoal, coke, or

other substance may be placed, through and over which the gas must percolate before leaving the retort. The retort door is secured by means of a "screw band" with bent ends.

[Printed, 7d.]

A.D. 1855, September 29.—N^o 2173.

CHADWICK, DAVID, FROST, HERBERT, HANSON, GEORGE, and CHADWICK, JOHN.—"Improvements in apparatus for "measuring water and other fluids and gas, applicable also as "a motive power engine."

This invention relates to improvements upon a patent granted to George Hanson and David Chadwick, bearing date the 31st March, 1853, and consists in two methods in using the flexible bag therein described.

First, the flexible bag, water or gas-tight and made of oiled leather in preference, is attached to a curved metal plate, and placed in a circular casing, so that the curve of the plate will be concentric with an axis within the casing. On this casing are placed two discs, one at each end, which may rotate freely, and the discs carry three rollers, one of which at least always presses on the flexible bag and curved plate. The water, gas, &c. to be measured is admitted into the bag by an opening at one end, the pressure of which causes the bag to fill, and to drive round the roller which may then be pressing on it; the second roller coming round encloses a certain quantity of gas, &c. between it and the first roller, and is in its turn driven round as the first roller was. There is an exit opening at the other end of the bag, through which the gas, &c. escapes for consumption the moment the first roller passes over the opening. In the meantime the third roller on the discs has come into action, and thereby constitutes the motion a continuous one. The counting movements may be taken off from the axis of the discs.

Second, the flexible bag may be attached to and wound round a hollow cylinder capable of revolving. The water or gas to be measured is caused to flow into the interior of the cylinder and through an aperture in the periphery into one end of the bag. Over the cylinder and pressing on it is placed a roller, which acts as an abutment. The other end of the bag is open to the enclosing, casing, and consumption pipes. When the water, &c. is turned on, it flows into one end of the bag, and filling it causes

the cylinder to revolve, which admits of the whole bag being filled, and at the same time will empty the other end of the bag of that which it had been filled with during the previous revolution. The principle of this invention may be adapted to motive power engines.

[Printed, 10d.]

A.D. 1855, October 1.—N° 2177.

GEDGE, JOHN.—(A communication from Mathieu Dauriac.)—“ Improvements in gas meters.”—(Provisional Protection only).

“ The object of this invention is to ensure both the supplier and consumer from fraud. It is proposed,” first, “ to place a regulating cock on the supply tube to regulate the quantity of gas admitted into the drum cylinder, preventing undue pressure while ensuring sufficient supply.”

Second, “ place a transparent plate (glass or other), on which at the proper spot will be marked the word ‘ level ; ’ or to place a float on the water with a valve and rod, which will rise or fall with the water, and show first the level, and then, by an index, the rise or fall.

Third, “ to have the supply pipe made in form of a siphon, and to intercept the communication between the two branches by a little grating ; thus it will be impossible to withdraw more than the trifling quantity of water contained in the siphon.”

[Printed, 3d.]

A.D. 1855, October 6.—N° 2238.

JOHNSON, JOHN HENRY.—(A communication from Audry, J. B. T.)—“ Improvements in apparatus for consuming smoke, to be applied to lamps and gas burners.”—(Provisional Protection only.)

“ This invention consists in causing the smoke and gas, in combination with atmospheric air, to traverse or circulate over surfaces of metal or other suitable material, made hot by the heat thrown off by the flame in the lamp or gas burner, or by the smoke and gas thereby evolved, and in causing such smoke and gas to escape at a different outlet instead of allowing them to return and escape at the same orifice by which they entered, as is the case with ordinary smoke consumers.” This may be effected by conducting the products of combustion, by means of

an inverted funnel, into a “bell,” whence it proceeds into an “inverted bell,” and then upwards into an outer bell; a projecting boss in the inner bell assists in the combustion of the smoke.

[Printed, 3d.]

A.D. 1855, October 10.—N° 2263.

PYNE, RICHARD WILLIAM, and MALAM, WILLIAM.—(Provisional Protection only.)—“An improvement in the manufacture of gas.”

Consisting of an apparatus for producing gas from fat, oil, &c., which may be advantageously adapted to a kitchen range. An iron vessel may contain three compartments, and the oil being introduced into the first is decomposed, and the gases passed into the second, containing “coke or filtering medium,” and enters the last compartment, from which it finds its exit through a discharge pipe.

[Printed, 3d.]

A.D. 1855, October 13.—N° 2290.

THIBIERGE, GERMAIN ADOLPHE.—“Improvements in manufacturing chlorine, part of which are applicable for obtaining certain accessory products.”

This invention consists in the production of hydrogen, chlorine, and peroxide of iron, by the following means:—Muriatic acid gas artificially dried is caused to pass over iron at a high temperature, contained in a suitable vessel capable of resisting the simultaneous action of the gas and a red heat. The resulting products are protochloride of iron and hydrogen gas. The hydrogen may be stored in a gas-holder, and afterwards used for lighting, heating and other purposes. The protochloride of iron is then submitted in the same vessel to the action of a current of dried atmospheric air, the effect of which is to decompose the chloride of iron, and to produce peroxide of iron and chlorine.

[Printed, 4d.]

A.D. 1855, October 13.—N° 2297.

LOZANO, MANUEL PEREZ.—(A communication.)—“Improvements in treating pyrites and ores containing sulphur in obtaining sulphuretted hydrogen, and in precipitating copper from solutions.”

These consist, first, in a furnace for the purpose of distilling sulphur from pyrites or ore containing sulphur. The pyrites being broken into small pieces are placed in a furnace, so constructed that a stream of mixed hot smoke, vapours, and gases, proceeding from another furnace, "called the gas generator," shall enter the pyrites furnace at the roof, and percolating down through the pyrites escape at the bottom, carrying with it the sulphur in a gaseous state to the condensing chambers.

Secondly, "relates to the production of sulphuretted hydrogen " gas from pyrites, and consists in passing heated inflammable " gases, such as hydrogen or carburetted hydrogen gas, arising " from the combustion of coal, peat, and wood," through pyrites contained in a similar apparatus to that already referred to; or sulphuretted hydrogen may be obtained by passing the gas obtained by the destructive distillation in a retort of coal, oil, &c. through other heated retorts containing such porous substances as calcined pyrites, coke, &c., into which is introduced a sufficient supply of melted sulphur; or, lastly, sulphuretted hydrogen may be obtained in a pure state by heating together sulphur with such substances as "tar, pitch, resin, stearine, oils, or other fatty animal " or vegetable matters" in a cast-iron retort. The heat should be applied slowly, and gradually raised to the evaporating temperature of sulphur.

Thirdly, relates to the application of sulphuretted hydrogen for the extraction of copper from copper ores; the ore containing copper in the state of "sulphide" is calcined in the usual manner; the resulting sulphate of copper is washed out, and exposed to the action of sulphuretted hydrogen in air-tight chambers, the action of which is to separate the copper from the iron. The precipitated sulphuret of copper is then "washed, pressed, dried, " and smelted into rich regulus, which may be worked for fine "copper by any one of the well-known methods."

[Printed, 11d.]

A.D. 1855, October 19.—N^o 2345.

BASFORD, WILLIAM.—"Improvements in the purification of " coal gas, and for obtaining a residuum therefrom."

To effect these improvements "prepare coal gas in the ordinary " manner, either by iron or clay retorts, or otherwise, and cause "the gas so made to pass therefrom through vessels or apparatus

" charged or filled with any of the various charcoals and heated ;
 " charcoal made from wood is preferred, which should be pro-
 " viously immersed in a strong solution of lime water for a period
 " of not less than fifteen minutes. The proportion of the lime to
 " the water is about 1 cwt. of lime to one hundred gallons of
 " water, or such proportion as is known to chemists under the
 " term of 'saturation.' The prepared charcoal, placed in a
 " vessel or apparatus, is to be heated to a temperature which in
 " practice is found to be most suitable. When the vessel or
 " apparatus attains a heat between a dull and a bright red, which
 " vessel or apparatus may be fixed in the generating oven with
 " the retorts, or in a separate furnace."

[Printed, 6d.]

A.D. 1855, October 19.—Nº 2347.

GILLER, HENRY.—“An improvement in globes and shades for
 “gas and other lights.”

This “improvement consists in forming globes and shades of
 “prisms of glass, known in the trade as spangles, or other like
 “pieces of glass, similar to those used in the construction of
 “lustres. These spangles are strung together or otherwise
 “attached, and are made to assume any form by being shaped
 “over a suitable frame. By varying the colour and shape of the
 “prism, very elegant and novel effects will be obtained.”

[Printed, 6d.]

A.D. 1855, October 31.—Nº 2432.

NEWTON, ALFRED VINCENT.—(A communication.)—“Im-
 “ provements in the manufacture of gas.”

These improvements relate to apparatus for and mode of gene-
 rating hydrogen gas by the action of muriatic acid on metallic
 zinc, and the “carbonizing” of the hydrogen gas for the purpose
 of improving its illuminating properties. The metallic zinc being
 placed in a cage is suspended in the acid, which is contained in
 a cylindrical vessel called the “generator.” The generator is
 covered and enclosed by a dome resembling a gas-holder, provided
 with a water joint to prevent the escape of gas. Attached to one
 side of the generator is another vessel, filled to a sufficient height
 with water, which is in part only covered with the dome, the edge
 of which enters the water, and prevents the escape of gas in that

direction. In this portion of the apparatus is placed in an inclined position an endless chain provided with carrying brackets, revolving over a square pulley at each end resembling a Jacob's ladder, the lower end of which is under the uncovered portion and the higher end over the edge of the "generator." The zinc may therefore be introduced into the generator by dropping it down through the water into the buckets, which on being set in motion will carry it up, and throw it over the edge of the generator into the acid. To insure more perfect incorporation of the hydrocarbon used with the hydrogen it ought to be placed in the generator along with the acid and zinc. And in order to draw off the gas at the most dry point the draw-off pipe is carried up to nearly the top of the gas-holder, and is provided with an opening under the surface of the acid to allow any condensed matter to flow back. The draw-off pipe for the chloride of zinc is provided with a flexible tube, which may be used for supplying the acid to the generator, by elevating its mouth, or for emptying it by depressing its mouth sufficiently low.

[Printed, 1s. 3d.]

A.D. 1855, November 12.—N° 2535.

CROSLEY, WILLIAM.—"Improvements in gas meters."

These "improvements consist, first, in regulating the level of "the water line within the hollow cover of the measuring wheel, "by introducing an overflow pipe therein, such overflow pipe "communicating with the atmosphere at any portion of the "meter below the true water level.

"Second, in the application of an hydraulic seal to the water "line or overflow pipe, such seal being formed by an inverted "cup or chamber, so arranged as to constitute a double seal "and thereby prevent the water forming such double seal from "being surreptitiously abstracted from the seal in a manner to "afford a passage for the gas through such overflow pipe. Another "mode of effecting this object consists in the application of either "a spherical or flap valve to the interior of the water line or "overflow pipe, and so arranged or disposed that the valve will "open freely to allow of the exit of the water, whilst at the same "time it will be instantly closed if the pipe be blown into, or a "cotton wick siphon attempted to be introduced, or other means

" employed for the purpose of expelling or extracting the water
" from the pipe.

" Third, in the application of a similarly constructed double
" hydraulic seal to the bottom of the ordinary gas syphon or
" passage pipe, for the purpose of preventing fraud by the ab-
" stracting of gas from the bottom of such syphon pipe.

" Fourth, in the application of a double hydraulic seal to the
" water supply pipe, such hydraulic seal being on the same prin-
" ciple as that herein-before described, whereby the fraudulent
" extraction of gas from the meter through the water supply is
" effectually prevented.

" Fifth, in the application of a gas passage in lieu of the ordi-
" nary outlet, either to the inside or outside of the case of the
" meter, the mouth or gas entrance to such passage being placed
" so near to the true or proper level of the water, that whilst a
" sufficient quantity of gas would be allowed to pass to supply
" the requisite numbers of burners so long as the true level of
" the water was maintained, yet if the meter be tilted, or any
" appreciable excess of water be poured into it, the entrance to
" the gas passage would be closed thereby and the supply cut off."

[Printed, 10d.]

A.D. 1855, November 19.—N° 2602.

SMITH, WILLIAM.—(A communication.)—" Improvements in
" gas regulators."

In this case the inverted vessel used for the purpose, floating in mercury, is enclosed in a box in the usual manner, from the centre of which is suspended by a rod a "circular or barrel valve." As the inverted vessel rises or falls by means of the greater or less degree of pressure of the gas within it, the circular valve is brought more or less near to the inlet opening or seat of the valve, and thereby more or less closes the opening for the gas to flow through to the consumption pipes. The lower edge of the circular valve dips into a cup of mercury, by which means the direct pressure of the gas is taken off the valve itself, and thereby obviates derangement in its action from that cause; various modes are shown for the application of this principle. The "regulating vessel" is made of one piece by stamping of sheet metal "in powerful presses in the manner of making thimbles, knobs, cap-
" sules, and other such articles," which prevents corrosion and leakage at the joints as has occurred hitherto, and the iron is

further protected by being "coated with a vitrious or other glazing," or by a "thin coating of platina or aluminium."

[Printed, 1s. 1d.]

A.D. 1855, November 20.—N^o 2613.

PULS, FRANCIS.—"A new electric light and heat."

This invention consists in "the collecting and employing the gas or gases emanating direct from galvanic batteries or piles, or the like combinations, for heating and illuminating purposes, either with or without" the use of metallic wires for it to impinge against, or the addition of carbonizing materials, such as naphtha, benzol, camphine, or a mixture of them, to heighten its illuminating power. Any suitable apparatus may be used for this purpose.

[Printed, 5d.]

A.D. 1855, December 10.—N^o 2786.

BROOMAN, RICHARD ARCHIBALD.—(A communication from De Flers, C. M. I.)—"Improvements in manufacturing gas from peat, and in treating hydrogen gas in order to render it illuminating."

These improvements consist, firstly, in "the carburetting of peat and hydrogen gas by means of the tar from peat completely deprived of the watery particles which it may contain."

Secondly, in "the separate preparation of peat, gas, and tar, for the purpose of depriving them of the water and watery particles they may contain, and the subsequent reuniting of the anhydrous peat, gas, and tar, whereby a gas of strong illuminating properties is obtained." The peat gas may be dried by passing it through suitable vessels containing "pumice stone, coke, or brick, impregnated with sulphuric acid." The tar may be deprived of water by heating it gently in a closed iron vessel while subjected to the action of a vacuum.

Thirdly, in the general arrangements of apparatus for "manufacturing peat and hydrogen gas," and for "treating the tar."

[Printed, 1s. 2d.]

A.D. 1855, December 11.—N^o 2797.

JOHNSON, JOHN HENRY.—(A communication from Etienne Abram Maccaud.)—"An improved apparatus for discovering the leakage or escape of gas."

" The apparatus consists of a cylinder with a bed plate, for the facility of attachment to a wall or other convenient object, to the lower extremity of which cylinder is fitted a pipe, connected to a force pump, which may be worked by hand or by other suitable means. Air is drawn in at one aperture of the pump, and forced into the pipe and cylinder by another aperture, whence it passes to the supply pipes and to two side tubes in connection, the one with a dial pressure gauge, and the other with a mercurial gauge for indicating the pressure in the gas pipes, all the cocks at the burners and meter having been previously closed. Any leakage that may occur in the pipes will be readily indicated by the hissing of the air through the leaks. In place of forcing air into the pipes a vacuum may be made therein, the apparatus being worked in a reverse manner to that herein-before described. After having stopped the places where an escape has been discovered, introduce through the pipes and fittings by the aid of the force pump any suitable cleansing liquid capable of dissolving the deposits left by the gas in its passage through the pipes. The force pump will serve also for removing any drops of water which condense in the pipes, and produce, as is well known, a flickering or jumping of the lights."

[Printed, 7d.]

A.D. 1855, December 15.—N° 2840.

STEWART, SAMUEL.—(Provisional Protection only.)—" An improved combined engine and gas exhauster, and also improvements in the valves of such exhauster."

This "invention refers to an improved combination of gas exhauster and steam engine, whereby action is communicated to the exhauster. It consists, in the first place, in placing the piston of the gas exhauster, which is a cylinder or double acting pump, in direct communication with the piston of a steam or other reciprocating engine; that is to say, the pistons of these parts are connected to the same rigid rod, or otherwise rigidly connected, and reciprocate uniformly and simultaneously with each other." The cylinder of the gas exhauster is provided with a single slide valve, similar to that of a steam engine, but so arranged as to permit the tar or other deposit in the cylinder to run freely off by the pipes. The slide valve of the exhauster

" is worked by an excentric cam, or by other suitable motion, from
" the fly wheel shaft, or other convenient part of the engine."

" The said pump or exhauster, arranged with the slide valve as
" described, may be actuated by any other suitable power for the
" purpose of exhausting gas from clay or other retorts, in order to
" relieve them from internal pressure."

[Printed, 8d.]

A.D. 1855, December 15.—N° 2842.

SALOMON, PAUL MARIE, MONTGAZAN, JACQUES LOIR,
and DE FLERS, CHARLES MARIE JOSEPH.—" Improvements
" in the manufacture of gas from coals, and in the production of
" bituminous coke in that manufacture, and also in the apparatus
" connected therewith."

" In manufacturing gas and coke according to this invention,
" a double set of retorts is employed, that is to say, the coals are
" placed in one retort, from which the gas is distilled much in the
" ordinary way, but before it passes away it is caused to pass
" through a second retort containing coke only. These retorts
" are placed in the same furnace or heated chamber, using one
" retort charged with coals to two retorts of the same size charged
" with coke; the retort containing the charge of coals is placed in
" the upper part of the furnace, while the two retorts containing
" the coke are placed below, each having a communication with
" the upper retort at the back end, while the pipes to deliver the
" gas into the hydraulic main proceed from the front of the coke
" retorts." " By thus subjecting the gas evolved from the coals
" to the action of coke in a heated state in a second retort, the
" illuminating power of the gas is improved, and coke, rich in
" bituminous matter, is produced."

[Printed, 7d.]

A.D. 1855, December 20.—N° 2880.

PORTEOUS, DUNDAS SMITH.—" Regulating the pressure of
" gas, steam, water, and other fluids."

This invention consists, first, in causing the gas, &c., to flow through a chamber provided with an inlet and an outlet pipe, the inlet pipe being supplied with a regulating valve opening inwards. The top of the chamber may consist of an inverted vessel floating in water, or of an elastic cover or

diaphragm, which in either case is connected to the regulating valve on the inlet pipe, by means of a link. As the inverted vessel or diaphragm is more or less elated by the pressure of the gas, so will the valve also be, and the flow of gas will thereby be cut off more or less as required. The inverted vessel or diaphragm being hinged at one side, will rise most at the other side, and both being provided with a lever or plate extending beyond the hinge or fulcrum, the required weight when used may be placed on either side of the fulcrum. If placed beyond the fulcrum the pressure may be made less than the weight of the cover, &c. The elastic cover may be made of vulcanized india-rubber, &c., or of an elastic thin metallic plate. In case of regulating "steam, water," &c., the use of a compensation valve is preferred, and the diaphragm may not be hinged, but act directly on the lever through which the required pressure is given.

[Printed, 9d.]

A.D. 1855, December 22.—N^o 2905.

ATKINS, ISAAC, and MILLER, MARMADUKE.—(Provisional Protection only.)—Improvements in apparatus for measuring and "regulating the flow of gas."

This invention has for its object the better maintaining "the uniform level of the water in the water chambers of gas meters." For this purpose another vessel of water is placed at a higher level from which descend two pipes, one of them from the bottom of the vessel to the surface of the water in the meter, and the other from the top of the vessel also to the surface of the water. When the surface of the water in the meter becomes so low by leakage or otherwise, as to leave the mouth of the second pipe bare, some gas enters by it into the vessel above, and a corresponding quantity of water flows down the first pipe and thereby restores the required level in the meter.

[Printed, 3d.]

A.D. 1855, December 22.—N^o 2908.

DICK, DAVID.—"A new and improved regulator for gas."

This mode of regulating the pressure or flow of gas consists in suspending a cup containing mercury or other liquid from an inverted vessel floating in water, oil, &c. The gas having access to the interior of the inverted vessel causes it to be elevated or

depressed in proportion to the pressure on the gas, the cup of mercury being raised or lowered with it. The mouth of the inlet pipe (which may be sloped or square at the orifice) is so placed that when the cup of mercury is elevated or depressed through excessive or reduced pressure of the gas, the mouth of the inlet pipe will be caused to dip more or less into the mercury, thereby reducing or increasing the size of the orifice for the flow of gas and regulating its pressure in the consumption pipes as required.

[Printed, 6d.]

A.D. 1855, December 28.—N° 2937.

SALOMON, PAUL MARIE.—(Provisional Protection only.)—
“ Improvements in the manufacture of gas from peat, and in the
“ coke resulting therefrom, and also in the apparatus connected
“ with that manufacture.”

These “improvements in the manufacture of gas from peat” consist in subjecting the gas, after distillation from the raw material, to the action of coke placed in a second retort, and kept in a heated state. The coke used for the purpose is that of the peat resulting from a previous operation. The coke is at the same time benefited as a combustible material. Place the peat in a retort somewhat of the ordinary kind, but from which gas is conducted at the back down into another retort placed in the same furnace or heat chamber, immediately below the first retort.”

“ The oxide of carbon may be separated from the gas by subjecting it to the action of a solution of calcium after it leaves the retorts.”

[Printed, 3d.]

1856.

A.D. 1856, January 3.—N° 20.

BRAMBACH, HERMANN.—(Provisional Protection only.)—
“ Converting dry pitch and other resinous substances, also coal tar and other tars, into neutral essential oils.”

“ Melt with a slow fire the substance to be distilled, if it is not already in a liquid state, and mix it with a quantity of lime sufficiently slackened to fall into powder, and in this way obtain a homogeneous substance easily handled. Put the mixture into

" a crucible or cast-iron muffle, furnished with a tube in communication with a refrigerator, and distil by gradually increasing the fire. A small portion of the products of the distillation consists of coal gas for lighting, which may be collected or allowed to escape. The greater part of the product is condensed in the refrigerator, and furnishes a brown and light essential oil, quite neutral. By applying to the product of the distillation the known methods of rectification, an essential oil is obtained of a light yellow color, which does not absorb the oxygen of the air. This essential oil burns in properly constructed lamps, without smell or soot, and it can be applied to dissolve resinous substances, caoutchouc, &c."

[Printed, 3d.]

A.D. 1856, January 17.—N° 124.

TOLHAUSEN, ALEXANDRE.—(A communication.)—(Provisional Protection only.)—"An improved gas meter."

These improvements consist in using in wet meters such fluids whose property is to attract water, and to hinder the freezing of the water in which they are dissolved."

These may consist of alkalies, acids, salts, glycerine or other similar bodies in suitable quantities.

[Printed, 3d.]

A.D. 1856, January 24.—N° 193.

PETTIT, GEORGE BROOKS, and SMITH, HENRY FLY.—"Improvements in gas heating apparatus."

This "invention relates to certain combinations of apparatus for obtaining heat from gas mixed with atmospheric air before ignition," and "consists in inserting into or adding to the top of a pipe (open at bottom for the admission of air, through perforated or other apertures, and to a supply of gas which is conducted through a tube the mouth of which rises above the apertures for the admission of air) various forms of burners, to suit the particular heating purposes to which the apparatus may be required to be applied. Also in fitting two or more gas and air pipes, into or upon one gas supply main."

The drawings attached to this specification exhibit upwards of one hundred and fifty modifications of burners, see specification and drawings.

[Printed, 1s. 5d.]

A.D. 1856, January 26.—N° 212.

GARDNER, EDWARD VINCENT.—“Improvements in heating, “drying, desiccating and evaporating.”

The apparatus described is particularly applicable to heating and drying air, to culinary purposes, such as baking, and for hot closets, drying linen, drying piece goods or paper, desiccating coffee, sugar, &c. ; drying manures, blood, &c. ; for ovens, for pottery and glass, for heating coal for the manufacture of gas, &c., and consists of a casing or chamber made of metal and of suitable dimensions ; at the lower part of this chamber and within it is placed a furnace or fire-place, and the chamber itself is fitted up with shelves so arranged that the draught from the fire is caused to flow from one side of the chamber to the other several times before it escapes at the roof into the chimney. On these shelves may be placed any desired shape or vessel to contain the material to be heated. Iron chambers connected together by bent pipes resembling the mode adopted for steam chests, for example, may be placed on the shelves, and air heated by being passed through them ; or these iron chambers may be open at each end to the outside, where rollers are placed to carry through the fabric to be dried ; or gas retorts, say sixteen of them, may be placed on the shelves in one case or chamber and heated by one fire.

[Printed, 9d.]

A.D. 1856, January 28.—N° 229.

GOODE, SAMUEL, JABEZ.—“A new or improved gas-stove.”—(Provisional Protection only.)

“The gas is allowed to escape from a jet or burner into a metallic chimney, the top of which is closed with wire gauze. The gas mixes with the air in the said chimney and the inflammable mixture is ignited above the wire gauze. The said chimney is situated in a conical” or cylindrical “flue, up which air from the apartment circulates ; the said flue opens into a chamber (which may contain a perforated diaphragm,) constituting the body of the stove, into which said chamber the heated air and products of combustion pass, and from which the air, after having partly given up its heat to the said chamber, may either enter the room, or pass off by means of a flue.”

[Printed, 3d.]

A.D. 1856, January 29.—N° 237.

LANCASTER, WILLIAM HENRY, and SMITH, JAMES.—“ Improved arrangements for the application of gas and atmospheric air to the generation of heat in furnace or other flues, and the consumption of smoke.” These improvements “consist in placing the retort or retorts in which the gas is generated in the fire-place of any boiler or other furnace, in the flues of which it is desirable to obtain additional heat and to effect the consumption of smoke. The arrangements for the combustion of the gas in the flues consist of a pipe or pipes for conveying the gas, when manufactured, to several sets of jets, disposed at suitable intervals along the course of the flues, and of plates arranged to form channels in the flues to convey to the several sets of jets a supply of atmospheric air, adequate to support active combustion. By these arrangements, the double object of generating heat and consuming smoke by the application of gas alone, or in combination with atmospheric air, or of atmospheric air alone, is completely attained.”

The gas may be generated in retorts from coal; in some cases the fire bars may be made hollow and steam passed through them whereby gas will be produced which may also be burned in the flue.

[Printed, 1s. 4d.]

A.D. 1856, January 31.—N° 270.

JOHNSON, JOHN HENRY.—(A communication from Pierre Alexis Maunoury.)—“ Improvements in gas burners, and in regulating the combustion of gas.”

“ According to this invention, in place of boring out two converging chambers in a metal cap, to form the two burners, it is proposed simply to insert two of the ordinary Manchester burners, with their upper ends slightly converging in a metal cap, which forms the main or double burner composed of the two single Manchester burners, which are fitted therein, the flames or jets of which are made to meet and combine a short distance above the main burner. An air passage may or may not be left between the two burners to increase the brilliancy of the light, and otherwise improve the combustion of the gas. The regulator, according to one modification, consists of a small metal disc hinged to one side of the lower mouth or entrance of

" the main burner, which is notched slightly at the side to admit
" of a certain amount of gas passing into it, even should the
" regulating valve be closed or forced by the pressure of the gas
" against the mouth of the burner, otherwise the light would be
" extinguished. Below the regulating valve is screwed a disc,
" having an opening in the centre sufficiently large to allow the
" requisite supply of gas to pass through; this disc serves to ad-
" just the amount of opening the valve, which when open rests
" upon it at one side. By screwing the disc up or down, it is
" evident that the regulating valve will be rendered more or less
" sensitive to the pressure of the gas. Above the regulator is
" fitted a wire gauze disc, for the purpose of thoroughly dividing
" or separating the gas into innumerable small streams before
" issuing from the burners. Wire gauze may also be applied to
" the air apertures at the bottoms of the chimneys of gas burners,
" for the purpose of dividing the air before getting within the
" chimney and feeding the flamé, whereby a greater brilliancy of
" light will be obtained. Another modification of regulator con-
" sists of two discs placed one above the other inside the burner,
" a space being left between the upper and lower disc. Each disc
" is perforated in the centre; the upper disc, which is larger, with
" a round opening, and the lower disc with a triangular opening,
" the latter opening being smaller than the former. When the
" pressure is too great, the lower or smaller disc is elevated and
" pressed against the upper disc, which latter being grooved
" radially on its under surface, allows a certain quantity of gas to
" pass through to the burner, but not so much as will pass through
" when the lower disc is only slightly elevated, and the two discs
" are not in contact."

[Printed, 7d.]

A.D. 1856, February 5.—N° 315.

HELY, ALFRED AUGUSTUS DE REGINALD.—(Provisional Protection only.)—“Certain improvements applicable in the burning
“ of gas.”

“ This invention consists in rendering the use of gas for lighting
“ and heating purposes more economical and wholesome by the
“ better consumption of the noxious vapours and products evolved
“ during its combustion, which vitiate the surrounding atmo-
“ sphere to the detriment of property and health. For this purpose

" I have a cap or covering of very fine metal, net, or gauze, for instance, that of 625 meshes, or thereabouts, to the inch superficial, which " is " applied to the glass or metal chimneys or envelopes now in use on or over gas burners, for the purpose of confining the flame and carrying off the smoke, &c., which prevents the escape of the noxious vapours and products evolved during combustion, and throwing them back upon the burner, materially improves the light and heat by their consumption in the flame. In some cases of risk and exposure I apply a cylinder, hemisphere, cone, or other suitable figure of metallic gauze to the gas burner direct, in lieu of a cap or covering to the glass or metal chimney or envelope thereof."

[Printed, 3d.]

A.D. 1856, February 6.—N° 329.

MEACOCK, JAMES.—" An improved means of fixing diaphragm in gas meters."

This "invention consists," first, "in fixing the diaphragms (in dry gas meters) in their seats or frames by interposing edges between the edge of the frame or seat, and a collar, which I secure by means of screws passing through the collar and the edges of the diaphragm and frame. By this means, on a diaphragm having to be renewed, the screws are taken out and the collar removed while the frame is still in its place in the meter.

" Second, in elongating the sides of the valve beyond the ports or apertures through which the gas is transmitted, and giving to the sides of the slide a corresponding elongation. The slide is worked in its horizontal motion from two centres and has on the opposite side a guide rod." By this " arrangement the valve is prevented from rising or canting during its backward and forward motion, and the non-registry of gas thereby totally prevented."

[Printed, 6d.]

A.D. 1856, February 9.—N° 344.

WAILES, GEORGE.—(Provisional Protection only.)—" Improvements in the construction of valves for regulating the passage of gas and other fluids."

This invention "relates principally to those valves employed in street mains, or other mains or pipes, in which the passage of

" gas or other fluids requires to be regulated or stopped, and consists in improvements in the means of transmitting motion to the slide valve for the purpose of opening or closing it. For this purpose I place a pulley or sheave on the axis or shaft to which the key or handle for moving the slide is applied; to this pulley I affix the end of a chain, wire rope, or other suitable flexible strap, the other end of which is carried direct and fixed to the further end of the slide. When the shaft and pulley is turned round, the chain is wound up, and so moves and opens the slide. Another chain or rope is fixed to and wound on this pulley in the opposite direction to that of the last, from thence it passes over a turning pulley, and back to the opposite end of slide to that at which the first chain is fixed. By turning the key shaft in the opposite direction to that before mentioned, this chain will be wound up, while the first-mentioned chain will be unwound, and so move and close the valve. The whole is enclosed within the casing of the valve, a suitable recess being formed in the casing for the reception of the pulleys, the shaft only being allowed to project in the usual way."

[Printed, 3d.]

A.D. 1856, February 16.—N° 403.

HYAM, JACOB HYAMS.—“Improvements in the construction of gas meters.”

The first part of “these” improvements consists in connecting together the rigid parts of the moveable diaphragm [of a dry gas meter] so that they may be made to act together, that is, when one is moved by the pressure of the gas entering the meter, it will, by being connected to the other one by means of a rigid rod or bar, move the other one also, and assist in delivering the gas from the meter.

Second, relates to “an improved mode of constructing the valve, which is of that description of valve known as the rotary valve; and consists in attaching the circular rotating plate (or cover) of the valve to a crank (actuated by the vertical spindle of the diaphragm), whereby it is moved excentrically or in a similar manner to that of the excentric of a steam engine. By constructing and arranging the several parts in this manner, the valve cover has a double motion communicated to it, that is to say, it is moved by the crank or excentric over the passages, so

" as to change alternately the direction of the currents of gas
 " through the different passages, and during this rotation round
 " the centre of the crank it likewise turns round upon its own axis
 " or that of the disc of the excentric by which it is moved, which
 " latter motion enables the valve more readily to free itself from
 " any extraneous matter that might tend to produce friction
 " between its face and the seat whereon it works."

[Printed, 10*d.*.]

A.D. 1856, February 10.—N° 424.

LAMING, RICHARD.—" Improvements in purifying gas, in preparing materials for purifying gas, and in apparatus to be used in purifying gas and disinfecting gas liquors or washings."

These consist, first, in " the use of quicklime mixed with any deliquescent substance [say five per cent. of chloride of calcium or chloride of sodium], for removing moisture and napthaline from gas."

Secondly, in " the use of one and the same portion of water, first to wash gas after it leaves a gasholder, and secondly, to wash gas on its way to a gasholder."

Thirdly, in " the manufacture of materials useful for purifying gas by peroxidizing either at a low red heat, or any lower and adequate temperature, a lower oxide of iron artificially distributed either by itself or in combination with an acid in earthy matter, or in a mixture of earthy matters, capable of neutralizing the acid, if any be combined with the iron, the said materials not containing any porous substance of a combustible nature." Protosulphate of iron may be mixed for this purpose with carbonate or caustic lime or magnesia, and porous substances, such as bricks, may be added.

Fourthly, in " the use of such perforated diaphragms in vessels for washing or scrubbing gas as are constructed each of two horizontal planes, placed one a little above the other, the perforations of the two planes not coinciding vertically; also the use of gas washers or scrubbers, each acting by a vertical and pervious diaphragm made of absorbent material, kept wetted by water, diluted acid, or other purifying liquid constantly descending from top to bottom of the diaphragm, and through which the gas is made to pass on its way upwards through the apparatus any number of times that may be requisite."

Fifthly, in "the use of an apparatus for disinfecting gas liquors or washings." This apparatus consists of a chest or trough divided into numerous cells with proper stops and connections, whereby two opposite currents of the gas liquors may be established, the one becoming cool and the opposite current hot during their passage.

[Printed, 5d.]

A.D. 1856, February 20.—N° 432.

CLIBRAN, WILLIAM, and CLIBRAN, JOSEPH.—"Improvements in and applicable to apparatus or mechanism for measuring and regulating the flow of gas, and in the mode of constructing parts thereof."—(Provisional Protection only.)

"Firstly, our improvements consists in adapting gas-regulators, so that they may be used and made to serve the purpose of a stopcock, by fitting the valve of the regulator [with a screw lever, &c.,] so that when close to its seat or facing it will effectually stop the passage of the gas.

"Secondly, in arranging a valve in one of the gas passages of gas regulators, to answer the purpose of a stopcock.

"Thirdly, in an arrangement of a gas regulator apparatus, which consist in employing a small case similar in form to a gasometer, 'floated' in a closed vessel containing water, in the same manner as a gasometer, but so that the pressure of the gas, instead of acting upon the interior to force it out of the water, acts on the exterior of it, tending to sink it in the water. This 'case' is connected to the spindle of a valve, which has its seating or facing in a chamber above the case, into which chamber the gas is admitted.

"Fourthly, in applying to and combining with gas meters a 'gas regulator,' worked by the water of the meter, or by water in connexion with that in the meter.

"Fifthly, in combining with a gas meter a gas regulator, which will also serve the purpose of the stop valve employed in that class of meters denominated 'wet meters,' to shut off the supply of gas to the meter when the water gets too low.

"Sixthly, in arranging the combination described under the fourth head of our improvements, so that the valve therein acting as a 'regulator,' and stop valve, may be made also to answer as the stop cock.

"Seventhly, in the arrangement and mode of constructing gas

" regulators of such small proportions, that it will be found ad-
 " vantageous to apply them to regulate the supply of gas to single
 " lights, such as the street lamps."

[Printed, 8d.]

A.D. 1856, February 22.—N° 452.

HEYWOOD, JOHN SHARP CROMARTIE, and LLOYD, GEORGE.—"Improvements in condensing vapours in distillatory operations, the manufacture of varnishes, melting and distilling of fats, and other manufacturing or chemical operations, and obtaining useful products therefrom."

These consist first, in "condensing vapours in the manufacture of varnishes, melting of fats, and other manufacturing or chemical operations in which access to the vessel is required during the operation, by means of an open moveable head or cover applied to the varnish pot or other vessel and connected to a case containing a revolving fan, by means of which the vapours are intimately mixed and agitated with air or with air and steam, and condensed in the fan case, or partly in the fan case and partly in a condenser into which they pass from the fan case."

" Second, in condensing vapours in the distillation of fats and other distillatory operations, by intimately mixing and agitating them with air or steam, or both, by means of a fan revolving in a case or chamber and collecting the condensed liquids from the fan case, or partly from the fan case and partly from a condenser into which the vapours pass from the fan case."

[Printed, 8d.]

A.D. 1856, February 25.—N° 480.

CLAUS, CHARLES FREDRICK.—"Improvements in metal ship building, applicable also to steam boilers, bridges, and other structures in which metal plates are used."

This "invention consists in the production of extended surfaces of metal by uniting a number of bars or strips in such manner that they are interlaced or platted together. In order to obtain greater firmness, the said bars or strips are notched and so arranged that projecting parts fit into corresponding recesses; and the lapping edges are rounded in order to gain a smooth face. I also weld the several portions, or apply tin and lead, or such metals, so as to solder the whole together. The metal

" plates thus formed may be applied to the construction of metal,
" ships, bridges, gasometers, and other structures in which metal
" plates are riveted together."

[Printed, 5d.]

A.D. 1856, February 28.—N° 514.

DE FONBONNE, CHARLES ALEXANDRE.—"Improved apparatus for the manufacture of coke, and for blasting, also for the production and extraction of illuminating and combustible gas, as well as ammoniacal and bituminous matters, part of such apparatus being applicable to the consumption of smoke."

These refer in the first place to a general arrangement of apparatus for the manufacture of coke and gas, wherein the furnaces four in number and set in pairs, are provided with suitable flues, dampers, hydraulic valves, &c.

Secondly, in applying an "artificial draft apparatus," "which aspires or inducts the gaseous and other products resulting from the distillation of the coal." This appears to be effected by an air pump.

[Printed, 2s. 10d.]

A.D. 1856, March 1.—N° 531.

HODGE, PAUL RAPSEY.—"Improvements in the methods of lighting domestic fires."

These improvements relate to a mode of using gas for this purpose. The gas is compressed by a pump, or by other suitable means, into a strong vessel, which may be shaped like a slop pail, capable of containing from 12 to 30 cubic feet of gas at from 3 to 20 atmospheres. This vessel may be readily carried from room to room; it is provided with a suitable tap, elastic tube, and metallic nozzle, to be inserted among the coals for the purpose of igniting them. A bellows may be attached to the apparatus, or the mouth may be used to blow air into the fire along with the gas, separate suitable piping being provided for that purpose, which joins the gas pipe near the commencement of the nozzle pipe.

[Printed, 10d.]

A.D. 1856, March 7.—N° 570.

DOWNIE, JOHN.—"Improvements in moulding or shaping metals and other materials."

"This invention consists, first," in "moulding articles of circular section, wherein a rotatory motion is imparted to the pattern, and, by means of an eccentric, or partly eccentric and partly concentric bearing, formed or fitted upon the pattern on the same axis, 'sleeks,' smooths, or finishes the mould surface, and withdraws the pattern.

"Second, the system or mode of forming moulds for casting shot, shell, railway chairs, camp ovens and covers, frying pans, gas meter cases, and scale weights, wherein the pattern is projected through a fixed 'parting' plate for the flask to be rammed up upon it, and is withdrawn to separate it from the mould surface prior to the removal of the rammed flask from the parting plate."

For particulars of this invention, see Abridgments on Moulding, Casting, or Shaping Metals.

[Printed, 1s. 5d.]

A.D. 1856, March 13.—N° 611.

DE CHATEAUNEUF, GRAND.—"A hydro-pneumometric gas meter."

This invention consists, first, in regulating the level of the water in meters, by means of another vessel containing a supply of water and placed at a higher elevation than the meter. The meter communicates with the higher vessel by means of two pipes, the lower end of one of them being just under the surface of the water in the meter, and its higher end above the level of the water in the higher vessel, while the lower end of the other pipe is also under the water in the meter, but its upper end is under the surface of the water in the upper vessel. If the level of the water should become lowered, a certain quantity of gas flows up the first pipe, and a corresponding quantity of water flows down the second pipe, and thereby restores the water in the meter to its proper level. Derangement, arising from the expansion or contraction (through heat or cold) of the air or gas in the upper vessel may be corrected by means of a siphon pipe dipping into a receiver of water.

Second, consists in regulating the flow of gas by means of a float floating in one leg of a siphon, the other leg communicating with the atmosphere. As the pressure of the gas varies, the float is more or less depressed, which, acting through a chain and counterpoise weight, turns a pulley more or less. In this pulley a circular

slot is cut, which is thereby caused to move over the flat surface of a plate in which a corresponding circular slot is also cut. The correspondence, more or less, of these two slots one with the other regulates the flow of the gas. The whole is enclosed in a suitable casing.

[Printed, 7d.]

A.D. 1856, March 25.—Nº 714.

WAILES, GEORGE.—“ Improvements in the means of actuating “ valves used for regulating the passage of gas or water in pipes.” —(Provisional Protection only.)

“ These improvements relate principally to valves in streets and “ other mains, and consist in the application of an eccentric or “ eccentrics, for the purpose of communicating motion to open “ or close such valves, and to regulate the area of passage through “ the valve. The eccentric is placed within a chamber in or an “ enlargement of the pipe through which the gas or water flows, “ and within a bridge or strap connected with the valve. The “ shaft by which the eccentric is moved enters the chamber “ through a stuffing box, and it is supported inside by a suitable “ step or bearing. The valve or valve stem moves in guides, and “ is furnished with stops to limit its motion, or stops may be “ placed on the eccentric for that purpose. Instead of an eccentric “ or eccentrics being used for this purpose, a camb or cambs may “ be substituted for giving motion to such valves, and which are “ mounted on and moved by means of the shaft entering the “ chamber by the stuffing box, as before mentioned.

[Printed, 3d.]

A.D. 1856, April 5.—Nº 834.

CRAIGIE, HENRY.—“ Improvements in heating apartments, “ where gas and water are used.”

“ For this purpose the apparatus is preferred to be of a cylindrical form, but other forms may be employed; and the apparatus is constructed of cylinders, one or more within another, having a water space or spaces between them. The inner cylinder or cylinders form what may be considered a chimney surrounded on all sides with water; at the lower part of which chimney is placed a gas burner or burners with ring flames, so that the air [may pass internally as well as externally of the

" flame of each burner employed; fire brick or other suitable material may be inserted within the body of the space occupied by the flame, and to a considerable distance upwards. Within the inner cylinders are fixed tubes, which admit of water flowing through them from one side of the chimney to the other as they become highly heated by the heated air and products rising from the gas burner or burners. The water is constantly supplied to the interior water space from a cistern above, when so required. The water thus heated is caused to circulate in a system or systems of pipes; the hot water for this purpose passes from the upper part of the heating apparatus by a pipe or pipes, and the cooled water returns by a pipe or pipes to the lower part of the heating apparatus, and the heated water may be drawn off from any part of the apparatus for other uses."

[Printed, 6d.]

A.D. 1856, April 19.—N° 944.

LONGBOTTOM, ABRAM.—(Provisional Protection only.)—
" Improved means of lighting and ventilating mines."

" The object of this invention is to generate illuminating gas by the application of the heat derived from the fuel used in creating a down draft to coal and other mines. For this purpose introduce into the mine to be ventilated any suitable arrangement of oil gas apparatus, preferring, however, to use that which forms the subject of a patent granted to me on the 13th September 1855, and this apparatus set to work by supplying the furnace with fuel, and the retort with oil or melted fat. A draft proportionate to the amount of fuel consumed will thus be created, and the heat generated by the burning fuel will heat the retort or retorts, and vaporize the oil as it falls therein from a reservoir. The resulting gas conduct by means of pipes into all parts of the mine requiring illumination, and consume it in fixed gas burners; when needful guard the gas burners by means of wire gauze, similar to the Davy lamp arrangement, and use reflectors where such may be found desirable."

[Printed, 3d.]

A.D. 1856, April 19.—N° 945.

CROSSLEY, WILLIAM, and GOLDSMITH, GEORGE.—" Improvements in wet gas meters."

“ These improvements consist, first, of a self-acting arrangement for compensating for the evaporation of the water in the meter, by which arrangement the true water level is maintained. “ This is effected by the employment of any rotatory apparatus, suitable for raising water, which apparatus delivers the water so elevated from a ‘separate’ supply reservoir into a reservoir communicating with the water in the measuring chamber. Any excess of supply over and above the absorption by evaporation is allowed to run off by the overflow pipe, and circulate back again into the supply reservoir. This rotatory water-elevating apparatus may be driven or rotated by any suitable arrangement of wheel work from the axis of the measuring drum.

“ Second, relates to the supplying the meter with water, and consists in connecting the water supply pipe with the tube through which the upright shaft passes, whereby one pipe only is required to dip into the water.

“ Third, relates to the adjustment of the height of the overflow pipes, which adjustment is effected by a screw thread made on the outside of the overflow pipe, and working through a corresponding nut or screwed plate.

“ Fourth, relates to the venting of the waste water chamber, and consists in making an air passage in the thickness of the metal forming the discharging spout or nozzle, such air passage communicating by a pipe with the upper part of the waste water chamber, and is so made as to be closed by a washer on the discharge plug.

“ Fifth, relates to a peculiar construction of overflow pipe, whereby the water is drawn off below the actual lip or edge of the overflow pipe after it has ceased to run over the top of the same, and whereby the water is prevented from mounting above the edge or lip of the overflow pipe after it has once ceased to run; this is effected by placing a small siphon near the top of the overflow pipe, the mouth of the short leg being outside the pipe, and slightly below its edge or lip.

“ Sixth, relates to an arrangement for stopping the supply of gas through the siphon pipe of ordinary gas meters, should the water line be raised above the proper level. This is effected by placing an inverted cup or cap over the top of the siphon pipe, which will be sealed by the water if it rises too high, and which cup or cap is made adjustable vertically.”

A.D. 1856, April 21.—Nº 954.

HANSOR, JAMES.—“ Improvements in the manufacture of “ illuminating gas.”

These improvements consist, firstly, in the preparation of the following compound to be used in place of coals in gas making, viz., “ peat, twelve parts by weight; resin of commerce, twelve “ parts; coal tar, eight parts; and resin oil or other oleaginous “ matter, sixteen parts.” These substances are to be mixed in an ordinary pug mill, and then converted into gas by the apparatus in preference for which the Patentee obtained Letters Patent, dated 21st March 1854.

Secondly, in the substitution of “ self-acting [clack] valves” for the stop cocks used for regulating the flow of gas from one retort to another.

Thirdly, relates to an apparatus for washing or purifying gas, which consists of a closed vessel, which may contain lime water. The gas after being cooled in the condenser is caused to enter this vessel, and to pass through the lime water by means of a pipe which dips into the liquor, the end of the pipe being provided with an inverted dish-shaped plate pierced with fine holes, through which the gas bubbles up and proceeds through an exit pipe to the gasometer.

[Printed, 6d.]

A.D. 1856, April 22.—Nº 956.

STROUD, JOHN THOMAS.—“ Improvements in stop cocks or “ taps for regulating or cutting off the passage of gas to com- “ bined gas burners.”—(Provisional Protection only.)

“ For this purpose I employ a hollow plug stop cock, fitted in “ a suitable seating, placed in communication with the burners “ by suitable passages, which passages pass directly through the “ seating and plug to the hollow in the interior thereof, into “ which the gas is admitted from the main pipe. In turning ‘on’ “ the gas it will pass, first, to the burner having the longest “ groove passage in the plug, then to that having the next “ longest, and so on; and lastly, to that having no groove com- “ munication. In a chandelier or other combination of gas “ burners so furnished and fitted, one or more of the burners “ may be lighted at pleasure simply by turning a single tap. “ Suitable stops or marks may be made on the tap to indicate the

“ position, if required. The same effects may be obtained by a “ sliding stop cock or valve having the passages similarly ar- “ ranged.”

[Printed, 3d.]

A.D. 1856, April 28.—Nº 1007.

NAPIER, GEORGE, and MILLAR, JOHN.—(Provisional Protection only.)—“ Improvements in the manufacture of gas from coal, “ tar, or other bituminous, resinous, or fatty matter.”

“ These improvements relate to the method of introducing “ these matters into the retorts, whereby the evolution of gas is “ facilitated, and the gas itself improved. A force pump is in “ communication with the supply pipe of bituminous, &c. matter, “ and placed between the reservoir and the retorts, whereby the “ fluid matter is forcibly injected into the retorts through suitable “ jet apertures, which distribute these matters over the interior “ surface of the retort. The retorts being kept in a heated state “ suitable for the conversion of these matters into gas, the whole “ injected matter is immediately converted into gas, and passes “ off through the main pipe by its generated pressure in the “ retort, sufficient time having elapsed to allow the greater portion “ of the gas to pass away from the retort, the injection of the “ matter is repeated, and so on, an almost continuous evolution “ of gas from the matter so injected takes place.”

[Printed, 3d.]

A.D. 1856, May 1.—Nº 1028.

DEFRIES, NATHAN, and BACHOFFNER, GEORGE HENRY.—“ Improvements in gas fires.”

These “improvements in gas fires consist, first, in forming the gas burner or jets used for such fires of argillaceous material, mixed with oxide of copper or other metallic oxides or metals in a finely divided state [the black oxide of copper in preference], which imparts [when burned] a hardness to the argillaceous material, and renders it more durable for the purpose; and also has this advantage, that it produces the burner of a dark or black color, which, if of a suitable shape, gives it the appearance of coals.

Second, “the compound of argillaceous matter and metallic oxides or metals” is formed “into small thin masses or layers

" having one or more openings through them, and over which
 " openings we place threads or films of asbestos, where they are
 " caused to adhere while the argillaceous matter is in a moist state.
 " These layers of argillaceous matter, thus composed, are placed
 " above each other over the burners emitting the gas, which in its
 " emission and ignition causes the whole mass to become ignited
 " or red hot, and thus represents much the same appearance as
 " coal fire."

[Printed, 4d.]

A.D. 1856, May 1.—N° 1033.

BROOMAN, RICHARD ARCHIBALD.—(A communication from P. Hugon.) —“ Improvements in compressing, regulating the pressure and flow of, and conveying gas, parts of which are applicable to air and other fluid pumps.”

These improvements relates, first, to a “ pump for compressing gas and other fluids, and consist of a pump barrel, fitted with a piston on the end of a hollow trunk, which forms the piston rod; an annular space is left between the trunk and barrel; leathern and metallic or other suitable packings are inserted round the cover of the barrel and round the piston, to prevent the escape of gas. The pump has three valves; one, the inlet valve in the bottom of the barrel; another in the piston, opening into channels leading into the annular space between the trunk or piston rod and the pump barrel; and the third, or outlet valve, at the side and near the top of the barrel, for the exit of the compressed gas; the first two valves open inward, the third outward; they are fitted in such manner as to be removed if required for repair or otherwise, without disturbing the other parts of the apparatus, and they are so constructed as to close hermetically. Each consists of a plug or closing piece [fitted with springs for closing them rapidly], hollowed out on the under side, and brought to a sharp edge, which fits hermetically in a metal seat.

Second, consists of an improved tap or cock, fitted with a conical or sharp edged plug [made of steel or other metal] for opening and closing the fluid way, acted on by a [screwed] key, which bears against the plug, but is not in a piece with it. To close the tap, the handle of the key is turned until the plug is pushed into a seat in the fluid way between the inlet and outlet

" orifices ; to open the tap, the handle is turned back and a " spring [provided for the purpose] pushes the plug out of its " seat. Packing fitted in a cap or socket is provided at the part " where the handle passes out to prevent the escape of gas there- " from.

" Third, the invention consists of an improved regulator, or " apparatus for regulating the flow of gas or other aeriform fluid. " This regulator consists of a receiver or vessel of a peculiar form, " floating in water in such manner as to oscillate or vibrate [up " and down according to the pressure] as if on an axis, and fur- " nished with arms [or levers connected at their ends] with a " friction roller, which acts on a plug fitted in the passage through " which the gas enters, and which according as the receiver rises " or falls, wholly or partially opens or closes the inflow of gas." " A spring is put round the plug to perform the opening action."

" Fourth, the invention consists of a cart or apparatus for the " conveyance of gas. This apparatus is a vehicle containing a " number of cylindrical vessels, each communicating separately, " with a pipe at the back of the carriage, provided with as many " taps as there are cylindrical vessels, so that the supply may be " cut off from each vessel separately. The "pipe" is provided " with a manometer, to indicate the degree of pressure of gas in " the receiver of any particular consumer. In this arrangement " each cylinder being separately connected to a general tube or " gallery, if one should happen to leak, the gas in that particular " cylinder only would escape."

[Printed, 1s. 1d.]

A.D. 1856, May 3.—N° 1052.

THOMAS, EVAN.—“ Improvements in the construction of count- “ ing apparatus for ascertaining and indicating the number of “ rotations made by shafts or spindles in various descriptions of “ machinery.”—(Provisional Protection only.)

“ The object of this invention is to prevent the possibility of “ the dial or indicators of the counter being moved” in either direction “and made to indicate erroneously. This may be “ effected by adapting to the inner end of the spindles of the in- “ dicating dials a small ratchet pinion provided with a click, which “ will prevent it from rotating in any but the right direction. “ When it is required to prevent the dial wheels from being

“ rotated in either direction, except by the action of the machine
 “ or meter, banking wheels are employed in addition to the ordinary wheel gearing of the indicating apparatus.”

[Printed, 3d.]

A.D. 1856, May 9.—N° 1099.

BASFORD, WILLIAM.—“ Improvements in apparatus for purifying coal gas.”

These consist “of an iron chest with circular bottom” divided horizontally by perforated plates, and vertically by a partition, into four compartments. The two upper compartments are filled in preference with charcoal, prepared as described by the Patentee in his specification, N° 2345, dated 19th October 1855. The whole being set up in brickwork and heated to a red heat, the impure gas from the retorts is caused to enter the lower compartments and percolate up through the heated charcoal contained in the upper compartments. From thence it may proceed to the gas-holder. Water may be introduced to facilitate the action of the heated charcoal. Suitable openings, which can be closed, are provided for the entrance and exit of the gas, the charcoal, &c.

[Printed, 9d.]

A.D. 1856, May 13.—N° 1128.

NEWTON, WILLIAM EDWARD.—(A communication.)—“ Improved apparatus for generating illuminating gases from coal or other substances.”

This invention consists, first, “in constructing the upper parts of retorts so as to form within the retort a circuitous passage or communication between the lower part, which contains the charge, and the outlet where the gas passes off, for the purpose of heating the tarry vapour sufficiently, and keeping it heated long enough for a considerable portion to be converted into permanent gas.”

“ Secondly, of a fastening for securing the moveable heads of the retorts; such fastening consisting of a ball connected with a retort mouth by hooked-headed bolts passing through lugs on the sides thereof, and operating in combination with an inclined or curved-edged rib, or its equivalent, on the retort head.”

“ Thirdly, in an arrangement of the flues, by which the flame and heated products of combustion are caused to pass, first, under the [two] bottom retorts, next under the top retort, then

" under the [two middle] retorts, and over the bottom retorts,
" and finally over the middle and top retorts."

[Printed, 10d.]

A.D. 1856, May 16.—N° 1164.

BARCLAY, ANDREW, and WALLACE, JOHN.—"Improvements in apparatus for the manufacture and measurement of illuminating gas." (Provisional Protection only.)

These relate, first, to "the securing of a constant unvarying level of the water in the meter, and consists of a" fountain, "or chamber communicating with the meter case at the height at which the water level is to be. This supply chamber is filled with water, and as the water in the meter just covers the aperture at its lower part, the water does not run out of it into the meter case. When, however, the level of the water in the meter case descends so low as to uncover the aperture, a bubble of gas or air enters the supply vessel, allowing a portion of the water to issue out and bring back the water in the meter case to its proper level.

Second, "consists of a hollow tube or lever containing a ball, or a quantity of mercury capable of running from end to end of the lever. This lever is nicely poised, so that on the meter being tilted in the slightest degree the ball or mercury will run to one end of the lever, and causing it to act on a valve, it cuts off the supply of gas. This lever may be arranged in various ways, so that the tilting of the meter may throw it over and close the valve and siphon. In another plan the valve is attached to the bent arm of a pendulous lever, so as to cause the closing to take place when any tilting occurs."

[Printed, 3d.]

A.D. 1856, May 19.—N° 1182.

CLARK, GEORGE.—"Improvements in the manufacture of illuminating gas."

These consist in employing "gas yielding oils," which contain neither oxygen nor sulphur, for the purpose of making gas. The oil preferred is that obtained from boghead coal, or other bituminous substance, heated in a retort to a dull red heat.

[Printed, 5d.]

A.D. 1856, May 22.—N° 1224.

BARRESWIL, CHARLES.—“Improvements in gas meters.”

“ This invention consists in substituting for common water generally used in gas meters, liquids that are not liable to be vaporized,” nor to congeal with cold. “ The liquids used are solutions of potash, carbonate or acetate of potash, chloride of calcium, magnesium, zinc, and deliquescent phosphates, such as phosphate of calcium,” and other similar substances. “ Also preferably glycerine, sulphuric and phosphoric acids, which absorb the humidity of the atmosphere, and thus dispense with the necessity of renewing water in the apparatus, and prevent it from congealing with cold.”

[Printed, 3d.]

A.D. 1856, May 22.—N° 1225.

BARRUEL, GERMAIN.—“ Improvements in treating cotton seed.”

“ The cotton seed, either whole or in a crushed state, is submitted to the action of heat in a close vessel, when the organic matters decompose in the ordinary manner, and produce gas, pyroligneous acid, a considerable quantity of ammonia, and a large proportion of fatty matters of great value. The cinders produced by the carbonization of the grain, contain, together with other salts, an important quantity of potash, which may be dissolved out by water. The apparatus which I employ for conducting the distilling process is arranged so as to condense the fatty matters, and also the aqueous products of the distillation, and apparatus of the ordinary description is added for purifying the gas by means of lime, which absorbs the carbonic acid, the ammonia having been first separated by means of acid or otherwise. The cinders produced by the carbonization of the grain are treated in the ordinary manner to separate the potash therefrom. The fatty matters obtained may be re-distilled or otherwise treated, according to the purpose to which they are to be applied.”

[Printed, 3d.]

A.D. 1856, May 23.—N° 1237.

GEDGE, JOHN.—(A communication from Delannoy, Nicolas.)—“ Improvements in the application of distillation to gas from the furnaces of steam engines.”

These consist in placing one or more retorts in the furnace of a steam engine, in any suitable manner, whereby the heat from the boiler fire will produce the gas without other expense.

[Printed, 6d.]

A.D. 1856, May 27.—N^o 1266.

HILLS, FRANK CLARKE.—“Improvements in the purification “of gas.”

These consist, first, in purifying the gas which escapes into the retort house, or other gas work buildings, by means of “a scrubber, “made preferably of thin wrought iron, placed in the top of the “roof, or in the upper part of the retort house [in preference], and, “as far as practicable, all the apertures in the slates or tiles and “upper part of the building are to be closed, so as to cause the “gas in the building to escape through the scrubber.” The materials used in the scrubber may consist of “coke, charcoal, or “saw-dust,” mixed with “hydrated oxides of iron.” These materials should be kept damp by steam, and a proper draft may be ensured by connecting the apparatus with the works chimney, or by a jet of steam, or otherwise.

Secondly, “consists in using warm water instead of cold for “spreading over the materials contained in an ordinary scrubber.” A temperature of from 70° to 100° F. is preferred.

Thirdly, “consists in spreading water or other clear liquid over “the materials contained in the scrubber, by means of porous “pipes, diaphragms, or filter stones, which, by allowing the water “to filter through them, will present a dewy surface to the gas, “and the water or other purifying liquid will be caused to drop “equally over the surface of the materials contained in the “scrubber; or a scrubber or condenser may be formed wholly of “porous filtering plates or diaphragms, instead of being filled “with coke or other greatly divided media, and the water being “caused to filter through these plates or diaphragms, will present “a damp surface to the gas, which will condense the ammonia it “contains.” Ransome and Sims’ artificial filtering plates are preferred for this purpose.

Fourthly, consists in the use of a vessel conveniently placed below the scrubber in the roof, already referred to, and through which the air and smoke are caused to pass before entering the scrubber; in the bottom of this vessel is placed a funnel shaped

basin containing water, through which a jet of high pressure steam is blown, and "partially converted into vapour, and will be dispersed in all directions, by which means the grosser or carbonaceous impurities of the gases passing through the vessel will be deposited or condensed before the gas passes into the scrubber."

[Printed, 4d.]

A.D. 1856, June 5.—N° 1340.

BRETON, JULES LE.—(A communication from Jeune François Alfred Chatel.)—A photo-gas, or apparatus with air draughts of hot oxygen when applied to oil lamps with wicks, for lighting and heating.—(Provisional Protection only.)

The description given is not quite clear; when seen "en coupe," the burner is circular and hollow, with an outside circle to support the chimney glass. The "manchon" is formed of a conical shape.

[Printed, 5d.]

A.D. 1856, June 12.—N° 1397.

STOTT, GEORGE LOUIS.—(Provisional Protection only.)—"Improvements in purifying gas."

These consist in causing gas to pass over or amongst oxide or carbonate of zinc. The resulting "sulphide," by roasting, will reproduce "oxide of zinc."

[Printed, 3d.]

A.D. 1856, June 19.—N° 1449.

DAMAZIO, JACINTO DIAS.—(A communication.)—"Process of making, illuminating, and heating gas, by a double distillation without retort."

Two coke' ovens being erected close together, are each supplied with proper doors and fastenings, that they may be made gas tight; between the ovens, and heated by them, is placed a vertical cast-iron cylinder, containing small pieces of coke. The interior of the coke ovens communicate with the iron cylinder by means of pipes; and the coke ovens are charged one after the other in rotation. When the coal in one oven has been heated to the proper point, its communication with the chimney is stopped, and

the vaporised oils and gases arising are caused to pass through heated cylinder containing the coke, and through the con-

densers and purifiers, by means of a sucking pump. The quality of the gas may be improved by the introduction of steam into the iron cylinder. The steam is superheated by causing it to pass through piping laid in the hot floor of the ovens.

[Printed, 10d.]

A.D. 1856, June 24.—N° 1478.

TAYLOR, JOHN.—“An improved vessel for containing chemicals “for the generation of disinfecting gases.”

The improvement consists in attaching a ring of vulcanized india-rubber to the under side of the cover, and depressing it upon the mouth of the vessel by means of a screw. The screw works through a cross-bar in a frame surrounding the vessel.

[Printed, 9d.]

A.D. 1856, June 26.—N° 1501.

DÜRRICH, GUSTAVE.—(A communication.)—“Improvements “in gas burners.”

This “invention has reference to improvements in regulating “and economizing the consumption of gas, and consists in “narrowing or contracting the tubular neck or cavity beneath the “burner, so that the first passage or passages through which the “gas has to pass shall be smaller, than the opening of the gas “burner where the gas is consumed, whereby a more perfect “regulation and supply of gas is obtained, than by those at “present in use.”

[Printed, 5d.]

A.D. 1856, June 26.—N° 1508.

MALEZIEUX, FRANCOIS JOSEPH LUCIEN.—(A communication from Mr. Gautier.)—(Provisional Protection only.)—“Improvements in the preparation of peat, and in the manufacture “of the same into fuel, charcoal, and gas.”

These consist in mixing and grinding peat in suitable mills, drying it, and cutting it into blocks. From peat so prepared may be obtained illuminating gas by submitting it, while placed in a suitable vessel, to the action of “surcharged steam.”

[Printed, 8d.]

A.D. 1856, June 30.—N° 1530.

GOODE, SAMUEL JABEZ.—“Improvements in gas stoves, and “the application of the same to the ventilation of buildings.”

These "improvements in gas stoves" consist in "the application of the flame of a mixture of gas and air to the heating of a chamber, situated in the interior of the body of the stove, the said chamber being supplied with air, either from the apartment in which the stove is used, or from the atmosphere external to the said apartment, which said air passes into the apartment, after having been heated by its passage through the said chamber."

Second, "in causing the flame of a mixture of gas and air to enter and heat a funnel-shaped flue, situated in the body of the stove."

Third, "in applying gas stoves to the ventilation of buildings." The gas stoves are placed near the top of the building, and ventilate into a chamber placed on the roof.

[Printed, 7d.]

A.D. 1856, July 7.—N° 1590.

CHENOT, ALFRED LOUIS STANISLAS, and CHENOT, EUGENE CHARLES ADRIEN.—"Improvements in apparatus for the reduction of metallic oxyds."

These consist, "first, in the reduction of metallic oxyds, by injection of flames or hot gases into the whole mass to be reduced."

Second, "the reduction of the same by external calefaction."

Third, "in the means specified of effecting the two said reductions, and also of using simultaneously both external and internal calefactions."

"Fourth, in the peculiar arrangement of the reduction furnaces described."

"Fifth, in the apparatus generating saturated hot gases." The chief object of this invention is to reduce ores contained in furnaces and vertical retorts, by means of "external or internal calefaction," which refers to the heating of such furnaces or retorts, by passing the hot air round their outsides, or by causing it to enter the interior. The apparatus claimed for "generating saturated hot gases," may consist of "an upright or inclined siphon, using one of the said compartments for combustion and distillation, and the other for reduction, saturation of the gases generated in the former compartment, besides the possibility of adding in either any enriching or other useful substances."

[Printed, 10d.]

A.D. 1856, July 15.—N° 1660.

CLIBRAN, WILLIAM, and CLIBRAN, JOSEPH.—“Improvements in apparatus or mechanism, for regulating and measuring gas.”

This “invention consists,” first, “in combining a ‘gas regulator’ with a ‘gas meter,’ both being worked by the same water; that is, the water in the regulator is in communication with that in the meter.” This may be “accomplished by adding to a meter a ‘case’ for the ‘gas regulator,’ and making a communication between the case and the meter, so that the water in the ‘meter’ can enter into ‘the regulator case.’ By this arrangement, the escape of gas from deficiency of water in the regulator is prevented, as the stop valve of the meter shuts off the supply of gas to the meter, when the water in it gets below the point fixed upon; at which point there is an ample sufficiency of water for the regulator, which, as is obvious, receives a supply when any is added to the meter. The gas may be made to pass through the regulator, either before or after passing through the meter.”

Second, “consists in arrangements, which will render practically impossible the filling of gas meters with water above the correct level. This is accomplished by placing the orifice of a pipe on a level with the correct water level of the meter, so that all water poured in after this level is attained, will overflow through the orifice of the pipe, which leads into a chamber formed in the lower part of the meter. If the water in this chamber be caused to rise above the correct working level, it will enter into the gas passage and stop it. Now, the water conveyed into the chamber by the overflow pipe will fill the chamber above the level fixed upon, and stop the passage of the gas; and this passage cannot be opened again, till the surplus water is withdrawn from the chamber by removing a screw plug, or by opening a valve.”

[Printed, 1s.]

A.D. 1856, July 15.—N° 1665.

JOHNSON, JOHN HENRY.—(A communication from Andry, Jean Baptiste Theodore.)—“Improvements in apparatus for consuming smoke, to be applied to lamps and gas burners.”

“This apparatus consists of an inverted funnel of glass, porcelain, or other non-conducting material, which is placed over the

" chimney of the gas burner or lamp. This funnel is suspended " by a cross-bar or strap, attached to its neck, and secured to a " rod or spindle, which also supports a metal bell placed over the " open top of the funnel. In the centre of the metal bell is formed " a projecting boss, for the purpose of deflecting the products of " combustion, which becomes burnt by being thrown in contact " with the highly heated surface of the bell. The products now " rendered innoxious are allowed to escape between the upper " part of the inverted funnel, and the lower part of the metal bell. " The metal bell is enclosed in an outer bell, of opaque glass or " porcelain, for the purpose of preventing any excessive radiation " of heat therefrom. As a considerable space is left between the " glass bell and the metal bell, the heated air and burnt products " will, in a great measure, rise up between them in place of being " thrown down into the body of the apartment, and will finally " escape by a perforated cap in the upper part of the glass or " porcelain bell, into the upper portion of the chamber, which is " thereby prevented from being overheated. The small quantity " of sulphuric acid also, which is produced by the combustion of " ordinary gas, is neutralized by depositing a thin layer of sul- " phate of copper on the inside of the bell, which deposit may be " removed at intervals by cleaning."

[Printed, 7d.]

A.D. 1856, July 19.—N° 1712.

BROOMAN, RICHARD ARCHIBALD.—(A communication.)—
" An improved method of supplying air to gas and other lights."

" This invention consists in so arranging gas and other burners, " that only sufficient quantity of air to support combustion may " be supplied to the flame, and that in a heated state, whereby a " better light is obtained, and flickering and cross currents are " avoided," and "may be carried into effect as follows:—Just " below the burner is attached a cup or shield, made of glass, or " other suitable material, which fits at bottom tightly round the " gas-pipe, or bracket, so as to exclude the air from below, and " forms at top a socket seat or support, on which the globe rests. " On the top of the globe or shade is fitted a disc or cap, made of " wire gauze or perforated metal, or other suitable material formed " with orifices; this disc has a central orifice, through which the " chimney of the lamp passes. Atmospheric air, to supply the " burner, and render combustion as perfect as may be, enters

" through the orifices in the cap or upper part of the globe,
" becomes divided into thin streams, and heated in its passage to
" the burner. The cap may be tinned or silvered on the under
" surface, and serve as a reflector."

[Printed, 6d.]

A.D. 1856, July 22.—N^o 1732.

COWPER, CHARLES.—(A communication from Simon Petit.)—

" Improvements in lighting and extinguishing gaslights."

" This invention relates to the lighting of several gas burners
" simultaneously, or in very rapid succession, by means of elec-
" tricity. Each gas burner is provided with a valve or cock,
" which is opened and closed by means of an electric current
" acting directly upon it by means of an electro-magnet or coil,
" or indirectly by releasing a detent. At the same moment that
" the valve is opened, or immediately afterwards, an electric spark
" is passed through the issuing gas, or a fine platinum wire is
" ignited in the gas. This may be effected by means of an in-
" duced current in a secondary coil on the same electro-magnet
" which opens the valve. The motion of the armature or other
" moving part of the apparatus then causes the electric current
" to pass on to a similar apparatus at the next gas burner, which
" is thus lighted, and the current passed on to the next, and so
" on, until the whole series of gas burners has been lighted. In
" this manner the whole of the gas burners in a building or in a
" street, or in several streets, may be lighted in rapid succession
" or almost instantaneously. By means of a reverse current, or a
" current passing through another insulated wire, the burners
" may all be extinguished in a similar manner. The electric cur-
" rent may be derived from one terminal battery alone, or assisted
" by intermediate or local batteries at intervals, or with a local
" battery at each burner. The earth or the gas pipes may be
" employed for the return current. The details of the apparatus
" admit of variation. Thus, in some cases, the current may cir-
" culate through all or several of the apparatus simultaneously,
" so that the burners may be lighted or extinguished simultane-
" ously instead of in rapid succession. By this invention, the
" same wire or system of wires serves for lighting and extinguishing
" a large number of gas burners. Various arrangements of appa-
" ratus may be employed in putting the invention into operation.

"The apparatus on which the current or currents of electricity act may also be constructed in various ways. Thus, the cock or valve may be connected to a spring or clockwork, which is prevented from moving it by a detent attached to the armature of an electro-magnet; so that when the current is passed through the wires of the electro-magnet, the armature is attracted, and the detent released, and the cock is thus opened or shut. Or, in some cases, the armature carries an escapement or pallets, which give motion to a toothed wheel, on the spindle or plug of the cock, and thus open it by a succession of strokes, produced by a succession of currents. The toothed wheel itself may be made to produce the required interruptions and succession of currents, by means of a series of alternate insulating and conducting points or segments carried by it; or an electro-magnet, with an armature, or another electro-magnet, or permanent magnet, having a rotary or rectilinear motion, may be employed to open and close the cock or valve."

[Printed, 8d.]

A.D. 1856, July 24.—N^o 1760.

JUDKINS, CHARLES TIOT.—"An improved gas regulator."

"This invention has for its object improvements in regulating or governing the supply of gas to burners. For this purpose, the gas is introduced by a supply pipe into one chamber or compartment of the regulator; from this chamber the gas passes into a second chamber or compartment. The valve for regulating the passage of the gas between the inlet and outlet chambers or compartments of the regulator, is carried by a cover [an inverted vessel], which may be made of cast-iron, and similar to others in use, having turned-down edges, which enter a trough containing quicksilver or other fluid." The inverted vessel is divided by a partition into two unequal sized compartments, and moves or rocks on the partition, or on supports. The gas is admitted into both compartments, but the larger size of the one in which the regulating valve is placed, causes it to be elevated or depressed, in proportion to the pressure of the gas; and in so doing closes or opens the valve as required. The smaller compartment is, at the same time, depressed into the mercury, and being made of thicker iron, its immersion compensates for the disturbing effect caused by the rise of the larger compartment out

of the mercury, as well as for the extra pressure of the gas on the valve itself."

[Printed, 6d.]

A.D. 1856, July 25.—N^o 1775.

BAGGS, ISHAM.—"Improvements in apparatus for lighting, "signalling, and telegraphing, by means of electricity."

These consist, first, in the instantaneous lighting and ignition of gas (when used for the purposes of illumination), and other substances. This is effected in the case of gas by wires suitably isolated, being taken to and from each burner, a small space being left between the ends of the wires over each burner, for the purpose of directing the electric spark through the gas, and thereby igniting it.

Second, relates to three modes of turning on and off the gas; and consists, first, in moving the tap on or off, by means of a small lever attached to each tap, which is connected by a rod to a piston, working in a small cylinder. The piston may be moved up or down by means of pressure, or through the agency of a vacuum. Several of such cylinders may be made to communicate with, and be worked by, one pump, or other central power.

Second, an exhausting arrangement may be made to communicate with a bent pipe, containing water or other liquid, in the hollow; one leg of this siphon is divided so far down into two parts, by a diaphragm, the bottom of which is submerged in the water, till the exhausting arrangement comes into operation: the effect of which is to draw the water up the leg communicating with the exhaust apparatus, and depress its surface in the other under the diaphragm, which then admits the gas to flow down one compartment, round the bottom of the diaphragm, and up the other compartment, which communicates with the burner.

Third, consists in forming a portion of each gas pipe or tube leading to a burner of an elastic material, such as vulcanized india-rubber, and causing another elastic tube called the "air tube" to cross each of these gas elastic tubes at a convenient point, the crossing being enclosed in a rigid casing. When the air tube is placed in communication with a suitable pressure chamber, it is expanded, and compressing the gas tube, stops the flow of gas; when the pressure is removed, the gas tube again becomes distended, and allows the gas to flow on to the burner.

The instrument used for producing the electricity of the desired tension, may be (in preference) a Leyden jar, or combination of jars.

Fourth, relates to the application of electricity, for the purposes of "signalling," and for telegraphing generally, for which see Abridgments on Electricity.

[Printed, 1s. 7d.]

A.D. 1856, July 26.—N^o 1783.

REMINGTON, HENRY.—“An improved gas heating and “cooking apparatus.”

“A metal case, cask, or other similarly-shaped vessel, is constructed with a false bottom, forming a chamber for containing the heat produced by the combustion of the gas beneath it; “two or more chambers” are formed “within the case or cask, “with closely fitting covers, and from the bottom of each I carry “a funnel or tube down to the end of the case or cask, and fit “thereto a tap. I also have one or more taps or cocks, for “drawing off the hot water contained within the case or cask; I “place this case upon a suitable frame or stand, in which is “arranged a row or rows of gas pipes, with jets or burners; being “lighted, a chop, steak, or other similar article may be quickly “broiled or cooked.” Wine, beer, &c., may be mulled in the chambers, and drawn off by the taps, and liquids generally may be heated in these chambers, the heat being communicated to them from the gas through the hot water contained in the case.

[Printed, 6d.]

A.D. 1856, July 29.—N^o 1794.

NEWTON, WILLIAM EDWARD.—(A communication.)—“Improvements in the process of generating illuminating gas.”

These consist, firstly, in making gas from “rosin, grease, oil, “tar,” or other such substance, which has been mixed with “some “porous, cellular, or coarsely divided substance,” such as “charcoal, bricks,” &c., “which in themselves contain no gas, and are “slow conductors of heat.” Such mixture is placed in a closed metallic vessel, having its bottom perforated with holes, and both are inclosed in a retort heated by a furnace. As the resin distils, the vapour escapes by the perforations in the bottom of the inner

vessel, and passing over and in close contact with the highly heated bottom of the retort, becomes changed into permanent gas. Attached to the retort is a steam generator containing porous substances, into which water is dropped, and the steam thereby produced, at a high temperature, but at a low pressure, is caused to enter the retort, and mix with the gas."

[Printed, 6d.]

A.D. 1856, August 1.—N^o 1826.

SHAW, WILLIAM FRANKLIN.—“An improved burner or apparatus, for the combustion of air and inflammable gas.”

This invention relates to that class of burners, by which the gas and air are mixed in a chimney, and passed together through wire gauze, and burned on the upper surface of the gauze; and consists, first, in adding to such an arrangement an additional tube or chimney of wire gauze to surround the flame.

Second, in placing a “deflector” round the wire gauze chimney, which will deflect the air through the meshes of the wire gauze, and thereby produce a more complete combustion of the gas.

[Printed, 6d.]

A.D. 1856, August 4.—N^o 1835.

LAUNAY, CHARLES THÉODULE, and CHOPIN, JULES.—“Improvements in increasing the illuminating power of gas.”

These consist in passing the gas in its way from the meter to the burner through an apparatus or chamber in which hydro-carbonaceous or carburetting liquid or fluid is presented to the gas in thin or minute streams or films through wicks, cottons, or other similar textile materials, the ends of which are made to dip in cups or compartments containing the same.” The apparatus used for this purpose may consist of a vessel divided into many compartments, from which the oil flows downward from one to the other; and from one side of these compartments to the other are stretched some textile material as “wick” which will absorb the oil by capillary attraction and expose a large evaporating surface to the gas as it is caused to pass upwards through the vessels on its way to the burner. The vessel may be supplied with an elevator or pump to return the oil to the upper compartment.

[Printed, 6d.]

A.D. 1856, August 4.—N^o 1838.

WRIGHT, ALEXANDER.—“ Improvements in lighting mines and “ subterranean places with gas.”

These improvements consist in forcing gas by means of a pump into a gas receiver on which a pressure may be put sufficient to force the gas down to the bottom of the mine, where it may be distributed and burned in the usual manner. In mines a thousand feet deep, or less, a pressure of about fifteen inches of water will be required.

[Printed, 8d.]

A.D. 1856, August 6.—N^o 1859.

FARRAR, JAMES, and SPENCER, HENRY.—(Provisional Protection only.)—“ Improvements in apparatus for regulating the “ pressure and flow of gaseous fluids.”

“ To accomplish this object the valve [in the inlet or outlet pipe or other chamber] is formed with a cylindrical dish or tube, having conical or V-shaped openings at its lower edge or end, which dips into mercury or other fluid contained in a cistern or chamber formed around the end of the inlet or outlet pipes or chambers aforesaid, so that the valve in its motion will, by means of the conical or V-shaped openings, shut off and regulate the pressure and flow of the gas to the burners when actuated by a lever or other means in connexion with the apparatus, partaking of the back pressure of the gas not required to be consumed at the burners. We also attach an adjustable stop piece or part to the pipes or other chambers, which, when set, will regulate the extent of opening of the cocks or taps, as above described. This invention is also applicable for regulating the pressure and flow of steam and other gaseous fluids.”

[Printed, 3d.]

A.D. 1856, August 9.—N^o 1877.

KOPP, EMILE.—(Provisional Protection only.)—“ Improvements “ in the manufacture of gas.”

These may be effected by means of “ a suitable mechanical arrangement, such, for instance, as an endless iron chain and a piston; coal or other fuel is gradually and continually introduced into the retorts, passes slowly through them, dis-

" engaging gas and being converted into coke, which coke or
" other residuum is continually discharged from the retorts,
" hydraulic occlusion preventing any undue escape of gas, which
" latter remains constantly of the same quality during the entire
" time of manufacturing."

[Printed, 3d.]

A.D. 1856, August 9.—N° 1882.

OWEN, EDWARD.—" Improvements in the manufacture of gas,
" and in the attainment of products arising in such manufacture."

These improvements consist in making gas, for illuminating heating purposes, from brewers' waste hops; any suitable apparatus may be employed for this purpose. It is preferred to dry the waste hops or to press them before putting them into the retort, and the resulting gas may be enriched by the addition of boghead coal. The charcoal, tar, and ammonia resulting may be collected and applied to useful purposes.

[Printed, 4d.]

A.D. 1856, August 16.—N° 1919.

LILLEY, SAMUEL.—" Improvements in the manufacture of
" ships' iron work, a part of which improvements is applicable to
" the manufacture of other articles in iron."

This "invention consists in the manufacture of slides, blocks,
" and other castings for ships (and for various other purposes
" including 'ornaments' for gas fittings,) by the use of chilled
" moulds, that is to say, metal moulds in place of the ordinary
" sand moulds, the said ships' castings, &c. are made either of
" ordinary cast iron or of that kind of cast iron which may be
" softened or annealed."

[Printed, 3d.]

A.D. 1856, August 23.—N° 1969.

RACSTER, WILLIAM.—" Improvements in apparatus for regulating the supply of gas."

These improvements consist in the use of a vessel or chamber divided in two by a partition, but connected at the bottom, which when filled to a certain height with water or other fluid will act after the manner of a siphon. One side of the vessel communicates with the gas and the other with the atmosphere, and

in each compartment is placed a float of a suitable shape and hinged. The floats are connected to each other by a bent piece of metal which curves round the bottom of the diaphragm. The float in the gas compartment carries the valve of the inlet pipe by means of a wire or rod, and when the water in that compartment becomes more or less depressed by the pressure of gas the float is lowered and the valve brought down more or less towards its seating, so that the flow of gas will be more or less impeded. By placing the requisite weights on the float in the air chamber the pressure may be duly regulated. The valve seat may be placed on the top of the float in a circular opening through which the gas passes to the burners, being brought by a pipe which rises above the surface of the water. In this case the valve is suspended by an adjustable rod from the roof of the enclosing chamber. The falling or rising of the float brings the valve seat more or less near the stationary valve and thus regulates the flow of gas.

[Printed, 7d.]

A.D. 1856, August 28.—N° 2009.

FEAUVEAU, JEAN BAPTISTE, and LEGRAND, LOUIS ALEXANDER.—“An improved apparatus for the purification and the “combustion of gas.”

This invention relates to “a peculiar arrangement of gas “burners, and to the use of a purifying or filtering apparatus “(which has the effect of a regulating apparatus also) connected “therewith, which may, however, be used with advantage apart “from each other.” The ‘arrangement of burners’ consists in placing two burners at such an angle towards each other, so as to cause their flames to cross each other; and the “purifying or “filtering apparatus” consists in inserting “a filtering plate or “grating” into an enlargement of the pipe through which the gas flows before arriving at the burners. The patentee proposes also to increase the illuminating power of the gas flame by placing on the top of the “glass chimney an annular plate with a pen-“dant rim or flange, with perforations or orifices in the said “plate.”

[Printed, 8d.]

A.D. 1856, September 4.—N° 2058.

ANDERSON, GEORGE.—“Improvements in the combustion of “tar and other similar matters in heating gas retorts, and in the

" consumption of smoke arising therefrom, and from other fuels
" used therewith."

For this purpose the retorts may be fixed up in one chamber or in more chambers than one, but in either case there must be two fire-places, or furnaces, the one to consume the oleaginous substance and the other the coke. The smoke and flame from both are caused to co-mingle and while burning to impart their heat to the retorts in the one chamber, or they may be conducted separately into a separate chamber fitted with retorts. The furnace for the coke may be of the usual construction, while that for consuming the tar, &c. consists of an inclined heated plate, down which the tar, &c. is allowed to trickle and be volatilized; the cinder from the tar falls into an ashpit underneath the inclined plate, through which a supply of air is admitted which ignites the cinder and keeps the plate hot and excess of air ignites the vapors arising from the tar.

[Printed, 1s. 3d.]

A.D. 1856, September 12.—N° 2140.

ELLIOTT, JOHN.—"An improved apparatus for containing and
" supplying water, gas, and other fluids, applicable also as a fluid
" meter."

The object of this invention is to allow liquids or gases to flow from a vessel without the admission of atmospheric air to their contents and without the necessity of an air pipe or valve, which may be effected by introducing a flexible air tight bag the mouth of which is attached to the cover of the vessel. If the vessel be filled with a liquid, for example, the bag, or it may be "a sheet " or disc," will float on the surface of the liquor and be carried up to the cover, but when the liquid is withdrawn the bag will follow and adapt itself to the sides and bottom of the vessel. The vessel may thus be emptied without the atmospheric air coming in contact with the liquid. A two way cock may be attached to the vessel for the inlet and outlet of the contents, and an apparatus for registering the number of times the cock has been turned may be applied.

[Printed, 6d.]

A.D. 1856, September 17.—Nº 2181.

SCHELLE, FRIEDRICH HEINRICH RUDOLF.—(Provisional Protection only.)—“An improvement in the manufacture of “ illuminating gas.”

This consists in introducing tar or the vapors from tar into a retort while it is distilling gas from coal at that part of the process when the gas begins to come off of a poor quality. The poor gas will thereby be enriched.

[Printed, 3d.]

A.D. 1856, September 27.—Nº 2263.

NEALL, GEORGE.—“An improved union gas stove for lighting “ and heating.”

This invention “consists of uniting one or more burners to a “ suitable metallic rim, on which rests a glass dome of a kind of “ bee-hive shape, and there being no openings or perforations in “ the said dome, it becomes very hot and heats the room, partly “ by radiation, and partly by the heated air that is constantly “ passing in and out under the dome. In some instances a glass “ reflector is placed underneath the burners. The whole being “ fitted to a suitable stand or suspended from the ceiling or “ bracket, becomes a very clean, economic and desirable stove, and “ from the top being made of a transparent material, it of course “ diffuses light at the same time. The dome may be made of “ china, &c. and may be ornamented.”

[Printed, 8d.]

A.D. 1856, September 27.—Nº 2266.

SMITH, WILLIAM, and TAYLOR, NATHANIEL FORTESCUE.—“ Improvements in apparatus for measuring gas and other fluids, “ and in regulating the flow of the same.”

“ These improvements relate :—

“ Firstly, to the parts forming the partitions or diaphragms of “ dry gas meters, and consist, when forming them of several “ pieces or plates of metal or other suitable material converging “ to a common centre, and united by flexible material (commonly “ called shielded partitions,) in applying to the centre of such “ flexible material a plate of metal, for the purpose of there keeping “ the flexible material from passing the inner edges or converging “ points of the plates.”

" Secondly, to the connections for effecting the correct relative motions of the several parts of such diaphragms, and consist in the application of a slotted piece at the point of connection of two of the parts or sections of each partition, with a forked arm from the spindle, by which motion is transferred to the valves, such slotted piece being to receive a bar, which by links is connected to two other of the parts or sections of the diaphragm, by which aided by a steadyng link, a simple to and fro motion is obtained thereto."

" Thirdly, to the valves for governing the passage of the gas to and from the measuring compartments of the meter, and consist in forming the seat of each valve in connection with two measuring compartments with four passages, three of which are parallel to each other, and the fourth transverse thereto, to effect a communication by the cover with one or other end passage in the seat, and in forming the valve cover with three parallel chambers or compartments, the two outer of which are connected so as to operate as one. When measuring other fluids, the improvements relate :—

" Fourthly, to applying a regulating valve to regulate the quantity of fluid admitted to the meter by the pressure of such fluid, and consist in placing such valve in position with a tendency to be opened by the inlet of the fluid, but which tendency is counteracted by a weight upon a flexible diaphragm at the same time, operated upon by such fluid, so that the one may counteract the other."

" Fifthly, to the valve for governing the direction of motion of the fluid alternately to and from the measuring compartments and consist in substituting, for the sliding motion heretofore adopted, a lifting or jumping, combined with a to and fro motion, controlled by a link or links fixed to axes, or by other suitable means with which a spring or steadyng means is sometimes employed, and in governing the movement of such valve by means of tappets supported from the moveable diaphragm; also to forming the moveable diaphragm or partition by means of a metal plate surrounded at the edge by an annular ring of vulcanized or prepared india-rubber."

" Sixthly, to employing in connexion with each measuring compartment of such meters, a spindle valve capable of acting alternately with the inlet and outlet passages thereof."

" Seventhly, to applying the inlet valve or valves to gas regu-

" lators, so as to have a tendency to open by the passage thereto
" of the gas, but which tendency is counteracted as the pressure
" increases beyond the consumption by the pressure of the gas
" lifting a flexible diaphragm, or it may be a moving cover sur-
" rounded by quicksilver, connected to such valve or valves, and
" thereby closing or partially closing such valve or valves to
" regulate the size of the passage for the gas. The diaphragm or
" moving cover is maintained in correct working position by
" parallel motion, and is capable of being weighted to the pressure
" which may be exerted. The inlet valve is also weighted with a
" tendency to close it."

[Printed, 1s. 7d.]

A.D. 1856, October 3.—Nº 2318.

WRIGHT, LEMUEL WELLMAN.—“ Improvements in gas
“ meters.”—(Provisional Protection only.)

“ For this purpose, the gas is supplied to the measuring part of
“ ‘a wet or dry meter’ by means of tubes of vulcanized india-
“ rubber or suitable material, and the gas is conveyed away from
“ the measuring parts of the apparatus by other like tubes. An
“ induction and an eduction tube are connected together by bent
“ metal tubes, the two ends of which enter cups or vessels con-
“ taining quicksilver. The one end or other of each of the con-
“ necting tubes of a meter is caused to dip into and be removed
“ from the quicksilver by the branch pipe being on the axis, which
“ is actuated by a weighted arm, which is raised by the measuring
“ apparatus when rising and falling, and such weighted arm falls
“ over when moved beyond the vertical position. The measuring
“ apparatus consists either of two flexible vessels, which are ex-
“ panded and contracted by being filled and emptied, or the
“ measuring apparatus consists of two inverted vessels immersed
“ in water. By this arrangement cocks and valves are dispensed
“ with. In place of using quicksilver as the means of stopping
“ and admitting the flow of gas through the induction and
“ eduction passages, as above explained, such passages (being
“ made of flexible and elastic material) may be caused to stop the
“ flow of gas through them by external pressure applied to them
“ by the falling over of a weighted arm.”

[Printed, 3d.]

A.D. 1856, October 6.—N° 2337.

AVRIL, VICTOR.—(Provisional Protection only.)—“Improvements in the manufacture of iron and steel, and in the construction of furnaces to be employed therein; also in the obtaining of a certain agent employed in such manufacture.”

These improvements relate to the reduction, smelting, and refining of iron ore in blast furnaces by means of “blasts of oxygen in a pure and electrified state or state of ozone” without adding fuel; to the constructing of an improved “furnace in such a manner that they may retain the gases for a considerable time and that draft may be diminished;” also to obtaining oxygen by separating it from the nitrogen of the air by means of “fans constructed on the difference of the relative density of the two gases,” or by treating ‘carbonic acid gas with potassium.’ The ore may be reduced, and cast iron converted into malleable iron and steel in the blast furnace by injecting together with the blasts of atmospheric air a mixture of clay, chloride of sodium, and peroxide of manganese in a state of powder.”

[Printed, 3d.]

A.D. 1856, October 7.—N° 2349.

MARRIOTT, WILLIAM, and SUGDEN, DAVID.—“An improvement in purifying coal gas.”

This improvement consists in adding sulphuric acid of a sp. gr. of 1425 (in preference) in sufficient quantities to saw-dust or other vegetable or animal fibrous material, and charring the mixture at a temperature of about 250° F. The result is a light porous matter, and is used on the shelves of ordinary dry gas purifiers in the same manner as other materials are used in such descriptions of purifiers, and acts by absorbing and combining with the ammonia contained in the gas.

[Printed, 3d.]

A.D. 1856, October 8.—N° 2354.

BRADFORD, WILLIAM.—“Improvement in the arrangement of gas burners for lighting and ventilating.”

“This invention relates to arrangements of gas burners required for lighting and ventilating large rooms or halls, and consists in a circular supply pipe which has short branch pipes

" of small diameter radiating from it at intervals about an inch
 " (more or less) apart all round; the end of each short branch
 " pipe to which a burner is fixed is bent upwards, so that each
 " burner is in a vertical position. This arrangement allows the
 " atmosphere a free, and, as far as possible, unobstructed access
 " to each gas burner, and thus a better combustion of the gas is
 " obtained. This arrangement of gas burner is suspended from
 " the ceiling of the room, and under an opening, or the orifice of
 " a pipe or channel for conveying away vitiated air and products
 " of combustion; between the opening or orifice for ventilating
 " and the circular supply pipe of the gas burners I place an
 " ornamental conical pipe, the smaller end of which rests on the
 " circular pipe supplying the burners with gas; the sides of this
 " conical pipe are perforated with holes or slits. Below and from
 " the centre of the circular pipe supplying the burners a branch
 " pipe descends, having a rose or burner on the end of it drilled
 " for a series of horizontal gas jets. These jets are immediately
 " under the ornamental conical pipe, and create through it a
 " strong ascending current of air. The air surrounding the ex-
 " terior of the ornamental conical pipe is drawn into the interior
 " of it through the perforations or slits, taking with it the heated
 " products of combustion from the burners on the short branch
 " pipes which are on the exterior of the ornamental conical pipe."

[Printed, 9d.]

A.D. 1856, October 11.—Nº 2388.

NEWTON, ALFRED VINCENT.—(A communication.)—“A new
 “ gaseous liquid, to be used in generating motive power.”

“ This liquid may consist of ‘one part of coal tar, three parts of
 “ oil, and eight parts of bisulphuret of carbon,’ to which is
 “ added sufficient cold oil of vitriol, or hypochlorous acid, to de-
 “ compose the bisulphuret of carbon into liquid carbonic acid.
 “ This compound (which is to be kept in a tight vessel) is what
 “ the inventor denominates ‘sulphoil carbonic acid.’ Another
 “ vessel containing carbonic acid gas [at about 36 atmospheres],
 “ and the vessel containing the sulphoil carbonic acid, are then
 “ connected together, and the carbonic acid gas thoroughly im-
 “ pregnates the sulphoil carbonic acid liquid, and forms a gaseous
 “ liquid, which represents the totality of the motive power, and
 “ is then ready for use, being about in the proportion of three

" of the liquid to one hundred of the carbonic acid gas in combination."

" To apply this medium or agent to propel machinery, a copper worm should be used, one end of which is connected with the vessel containing the sulphoil carbonic acid, and the other with the cylinder of the engine, serving as the supply pipe, which, together with the cylinder, is submerged in an oil bath, which is heated, in order to expand the gaseous liquid, on its passage from the reservoir to and in the cylinder, to work the engine, and is thence exhausted into any suitable condensing apparatus, where it is immediately condensed by injecting it into the reservoir, containing the same liquid for re-use."

" On the application of heat, the pressure will increase in the ratio of one pound per square inch to every degree of increased heat (Fahrenheit)."

[Printed, 4d.]

A.D. 1856, October 17.—N° 2435.

GOSSAGE, WILLIAM.—(Provisional Protection only.)—" Improvements in the manufacture of coal gas, used for illuminating purposes."

In carrying out this "invention, the separation of hydro-sulphuret of ammonia from crude coal gas, is partly effected by cooling, and thereby obtaining liquor containing hydro-sulphuret of ammonia; and the separation of the hydro-sulphuret of ammonia is completed, and also the decomposition of sulphuretted hydrogen, present in the crude coal gas, effected by the use of sulphurous acid, either in the gaseous state, or dissolved in water. By the action of sulphurous acid on hydro-sulphuret of ammonia, contained in crude coal gas, sulphite of ammonia is produced, and an additional proportion of sulphuretted hydrogen is added to the crude coal gas. The further introduction of sulphurous acid into the crude coal gas occasions sulphuretted hydrogen, present therein, to become decomposed, thereby producing sulphur and water, which may be separated from the coal gas, either by deposition or filtration; and thus obtain sulphur as a valuable product, also sulphite of ammonia, by the same operation by which coal gas is deprived of injurious sulphur compounds."

[Printed, 8d.]

A.D. 1856, October 23.—N° 2488.

MACDONALD, JOHN.—“ Improvements in regulating the “ supply of oil or other liquids, applicable to lamps, gas meters, “ and other useful purposes.”

This invention consists, first, in an arrangement of tubes and valves, and an upper or lower chamber, to contain the oil and air. The oil descends by a tube to the burner.

Second, relates to improvements in gas meters, and consists in attaching in a suitable manner to the meter two compartments, for the purpose of regulating the supply of water to the meter, as also the flow of gas. (See specification.)

[Printed, 7d.]

A.D. 1856, October 25.—N° 2511.

BACHOFFNER, GEORGE HENRY.—“ Improvements in glass “ shades for gas and other artificial lights.”

“ These improvements consist, first, in forming the shade [for “ gas or other artificial lights] with the opening, for the intro- “ duction of the gas pipe at the side, so that the pipe enters in a “ horizontal direction. The air to sustain combustion is admitted “ at the side where the pipe enters, or a supply may be admitted “ by a small hole in the bottom of the shade. The glass shade is “ also supported from the side, and is, therefore, without any ob- “ struction to the transmission of the light through the bottom “ of the shade, which may be quite closed, and of a plain or orna- “ mental character, as required. These glass shades may be con- “ structed, with the lower part formed to deflect the rays of light, “ in the manner of a lens or lenses. The upper part of these “ shades are open as usual.”

Second, “ consists in placing the lights [of night lights, &c.,] “ within two glasses as follows:—First, a short glass shade or “ chimney, supported from the bottom in a gallery or holder, “ having small perforations for the admission of air; the second “ and large glass shade encloses the inner one, which outer shade “ is closed at the upper part, but is furnished with perforations in “ its holder or gallery, for the escape of the hot and vitiated air at “ the bottom. The air, therefore, passes first up within the inner “ glass to supply combustion, and, escaping into the dome of the “ outer glass, is conducted down and out at the lower part thereof

“ thus preventing the possibility of anything catching fire from
“ lights so enclosed.”

[Printed, 7d.]

A.D. 1856, November 3.—Nº 2583.

KIRKHAM, JOHN.—(Provisional Protection only.)—“ Improvements in the construction of furnaces, ovens, or kilns, for drying, baking, or burning pottery, earthenware, bricks, tiles, or other similar articles, and in the means of collecting and condensing the smoke, gases, or vapours evolved from the fuel, in such or other furnaces, or fireplaces, or that escapes from the retorts and other parts of the apparatus, used in the manufacture of gas.”

These consist, first, in constructing a “furnace or oven,” arched over and air-tight at the top. “The flame and heat circulate through the oven, and are then drawn down by means of fans, or otherwise, and through descending and horizontal flues, and from thence are carried through a second, third, or more ovens, whereby the spare heat may be beneficially employed in drying and preparing the articles or wares to be next burned; the vapours are then conducted through close condensing vessels, containing pebble stones wetted with water, or other suitable materials, for increasing the contact surfaces.” The same principle may be applied to ventilating retort houses, or any other buildings.

[Printed, 3d.]

A.D. 1856, November 4.—Nº 2590.

NEWTON, WILLIAM EDWARD.—(A communication.)—“ Improved machinery for riming and tapping gas fittings.”

“ This invention consists, first, in the employment of a tool holder, provided with bits or tools, and capable of being turned upon ‘its’ axis in jaws, upon the end of the revolving spindle which carries it, the axis of rotation of the tool holder being at right angles to the axis of revolution of the spindle, so that any one of the tools may be brought into line with the spindle, and made to revolve therewith. The spindle is made to slide in and out by means of a lever, and is caused to revolve by means a strap and pulley.

“ Second, in combination with the above, the use of a rotary chuck or clamp, for holding the fittings, the whole being so

" arranged that the various riming tools and taps may be brought
 " to bear as required upon the fittings without removing either
 " the tools or the fittings from the lathe."

[Printed, 7d.]

A.D. 1856, November 20.—N^o 2745.

FONTAINEMOREAU, PETER ARMAND LE COMTE DE.—(A communication.)—“ Improved apparatus for preparing carbonic acid gas, and impregnating liquids therewith.”

This invention consists, first, in improvements in the general arrangements “of such apparatus.” Several modes of arrangement are described in the specification, and shown in the drawings. The first consists of an apparatus made of glass or metal, having “a generator with an india-rubber screw stopper,” for the admission of the ingredients for producing carbonic acid gas, a “receiver,” placed over to hold the liquid to be impregnated, provided with “an india-rubber screw valve,” “stop-cock,” and “wire gauze diaphragm, placed in the neck of the apparatus.” Another apparatus shows a mode of washing the gas by passing it through a pipe containing water before it enters the liquid to be impregnated.

Thirdly, consists of “a tinned or enamelled copper cylinder, of suitable dimensions, provided with a screw lid,” “valve stopper,” “leaden cylinder to hold the soda and acid,” and other requisites for drawing off the gas produced.

Fourth, consists of a series of three vessels, the first in which to produce the gas, the second to wash it, and the third to contain the liquor to be impregnated, all provided with suitable valves, cocks, pipes, &c.

[Printed, 7d.]

A.D. 1856, November 22.—N^o 2778.

CHADWICK, DAVID, and FROST, HERBERT.—(Provisional Protection only.)—“ Improvements in apparatus for measuring water and other fluids and gas.”

These consist, first, in the use of a flexible cylinder mounted in a casing, and divided into two chambers by a suitable moveable disc or piston, which is actuated by the gas. Instead of the above arrangement two or more flexible cylinders and pistons may be

caused to act in conjunction. The flexible cylinders may be so mounted as to be capable of oscillation upon a centre.

Second, consists in the employment of metal or other rigid cylinders divided by pistons into chambers, and mounted so as to be capable of oscillating on centres, such cylinders may be made or formed upon the "telescope principle."

[Printed, 3d.]

A.D. 1856, December 1.—N^o 2837.

GEDGE, JOHN.—(A communication from Allan Macpherson.)—
" Improvements in gas meters."

These improvements may be effected by placing a reservoir of water of any suitable form on a higher elevation than the meter, and causing a pipe to communicate between the reservoir and the water in the meter. The mouth of this pipe is made adjustable by means of a sliding piece, so that it may dip more or less into the water in the meter; should the water in the meter fall below the required level the mouth of the pipe becomes uncovered, and the required quantity of water flows down from the reservoir and restores the water to its proper level.

[Printed, 6d.]

A.D. 1856, December 3.—N^o 2862.

MIZEN, JAMES.—" Improvements in apparatus for making gas, partly applicable to culinary or other domestic purposes."

" The principal object of this invention is to economize gas
" making, and to place the means of making gas for lighting and
" other domestic purposes within the reach of all persons, and to
" apply the heat which is now lost at the gas works to culinary
" and other domestic and useful purposes."

" The apparatus to be employed consists of a retort or retorts
" of a cylindrical, rectangular, or other suitable form, which is or
" are to be applied at the back or side of an ordinary domestic
" range, provided with boiler and oven, as usual, or to any other
" ordinary fire grate of the usual or other convenient shape. The
" said retort is intended to distil coal, bones, wood, oils, and fatty
" matters, or any other refuse or other material from which gas
" can be evolved by distillation, and should be provided with a
" suitable lid, pipes to convey the gas, stop-cocks, &c., purifiers,
" and gasometer."

The "second part of this invention consists in providing the " top or lid of the boiler attached to the domestic range or grate " above named with a hole, in which is inserted a pipe, having a " funnel-shaped or other head to receive liquids intended to be " warmed, the lower end of the pipe being closed or provided with " a stop-cock for the purpose of drawing off the liquids when " required."

[Printed, 10d.]

A.D. 1856, December 9.—N° 2925.

THORNETT, JOHN, junior.—" Improvements in gas-burners." —(Provisional Protection only.)—" These improvements in gas " burner relates to argand burners, or such gas burners as may " have a button or other form of metal placed within the light, " and consists in making this button or form within the light, " a hollow channel through which the gas passes previous to its " emission from the burner to be consumed. The metal form, " within the light, constitutes a chamber, in which the gas is " highly heated by exposure in that chamber to the action of the " gas flame. The gas may be conducted up the centre of the " burner stem to this chamber, carried up above the emission " aperture of the burner, and within the light, as before mentioned. " This chamber is formed as large as may be in proportion to the " light. From the heating chamber the gas is conducted down " around the central passage by which it is entered, and passes " thence by passages in cross or forked arms that support the " ring of the burner. When emitted the gas so heated produces " a white flame, and with very little blue flame at the lower part."

[Printed, 3d.]

A.D. 1856, December 11.—N° 2932.

CHATWIN, J.—" An expanding compensating slide for sus- " taining gas and other lights, also applicable for other similar " purposes."

" The object of this invention is to supersede the use of weights " as a counterpoise for regulating the slides of gas and other " chandeliers, gas pendants, and such like articles; and this may " be effected by the use of a spring or springs bearing on or " abutting against the internal slide or piston [or against the " internal area of the outer tube], and which spring may be

" regulated with a screw or screws or india-rubber rings, or
" packing," or both may be employed for that purpose.

[Printed, 10d.]

A.D. 1856, December 15.—Nº 2970.

GRANT, JOHN.—(Received Provisional Protection only.)—"Im-
" provements in heating or cooking by gas, and in apparatus for
" effecting the same."

The apparatus consists of a " chamber, into which a hot air pipe
" [for the purpose of ventilation] enters at the lower part thereof,
" and from which an aperture in the top thereof communicates
" with a flue. The chamber is provided with a door at front.
" Round the sides, back, and top, is a hollow space or flue, which
" opens into a flue leading to a chimney or shaft." The hollow
space may be surrounded by a casing of water or non-conducting
material. The gas burner is placed round the bottom plate and
at the back and sides of the chamber.

[Printed, 3d.]

A.D. 1856, December 15.—Nº 2974.

NEWTON, ALFRED VINCENT.—(A communication.)—"Improve-
" ments in machinery for boring, turning, tapping, and screwing
" fittings for gas, water, steam, and other pipes, and in vices, for
" holding the same while they are operated upon."

This invention "relates to the arrangement and construction of
" several parts of a machine, and to the combination of two or
" more of those machines, so as to tap, screw, bore, ream, or turn
" different ends of pipe fittings at the same time," "and to an
" arrangement of vices for holding to the action of the machines
" the object to be wrought upon, and consists,—

" First, in governing the advance of the rotating traversing
" cutting tool by adjusting on the rotating traversing mandril
" that carries the tool, the driven part of the coupling to such an
" amount of lap with the driving part thereof that the advance of
" the mandril carrying with it the driven part of the coupling
" shall effect the disengagement of the coupling at the required
" point, thereby arresting the further rotation of the tool.

" Second, in constructing the coupling with long, short, and in-
" clined faces, for the purpose of reversing the motions of the
" cutting tool by the action of the coupling.

" Third, when the screw feeding gear of two or more machines are connected as described in combining either the nuts or screws thereof with springs.

" Fourth, in the wrist plate and its connections for the purpose of bringing the tools combined therewith to their work, and yet permitting any one of them to remain at rest or advance, or recede, in the work without affecting the others.

" Fifth, in the combination of two or more machines adapted to the purpose of boring, turning, tapping, screwing, or reaming different ends of pipe fittings at the same time with a vice common to the combined machines.

" Sixth, in the compound vice constructed substantially as herein described, having two or more sets of jaws adapted to holding, and arranged to revolve around a centre common to all the jaws."

[Printed, 11d.]

A.D. 1856, December 23.—Nº 3046.

ROSS, ALEXANDER, VALLENTINE, JAMES, MURRAY, ALEXANDER, and DON, ALEXANDER.—(Provisional Protection only.)—" Improvements in the purification of coal gas, the residuum of such purifying process being applicable either as a manure or for manufacturing gas from."

These may be " effected by the use and employment of all kinds of pine tree and hard wood, either in a state of saw-dust or in a chopped or bruised condition, to be used in lieu of the matters or ingredients hitherto employed for purifying coal gas, the same ordinary purifying apparatus, without alteration, serving for the purposes of purifying gas, according to this invention, as follows:—The gas upon coming into contact with the saw-dust or wood in any other state, chemical action ensues, and effects the purification of the gas, and the purifying matter (wood) is converted into a substance suitable as a manure or fertilizing agent; or, if not used for that purpose, it may be employed with advantage in the retorts, in lieu of coal, in the ordinary process of manufacturing coal gas, when it will be found to yield a considerable quantity of an excellent gas, and the residuum in the retorts will be pure charcoal."

[Printed, 3d.]



1857.

A.D. 1857, January 2.—Nº 16.

M'LENNAN, JOHN, PALMER, JOHN, and PALMER, JOHN HENRY.—“An economical gas light generator and consumer.”—(Provisional Protection only.)

“Consists in causing the gas light to expand or be drawn out, thereby obtaining a more brilliant light, as well as ensuring the perfect combustion of the gas, and which are accomplished by placing upon top of the glass a small dome, the diameter of which is about one-third the diameter of the glass, and the height of the dome about the same as the width. This dome is fastened to the glass in any suitable manner, providing, however, sufficient space for the admission of air.”

[Printed, 3d.]

A.D. 1857, January 3.—Nº 31.

CROLL, ALEXANDER ANGUS.—“Improvements in the manufacture of coal gas.”

These consist “in supplying the coal in such manner, that it may be distributed in thin layers in the retorts, so as to facilitate rapidity of operation.”

For this purpose, the coal, reduced to small particles, is placed in a closed hopper, attached to the upper end of an inclined retort, and is admitted into the retort in a gradual and continuous manner by means of a feeding screw. As the coal passes down the surface of the retort in a thin layer or stream, the heat given off from the fireplace causes the gas to be speedily generated, which then passes off in the ordinary manner by a pipe to the hydraulic main.

[Printed, 6d.]

A.D. 1857, January 5.—Nº 42.

OLDHAM, JOHN.—“An apparatus for closing the supply cocks of gas burners.”—(Provisional Protection only.)

“According to this invention, it is proposed to connect the lever of each cock or tap to be acted upon, at one end with a helical or other spring, which will always tend to keep the cock or tap shut, and at the other end with a bar of soft iron, by a short length of wire or chain. Beneath this bar is fitted a pair

" of electro-magnetic coils, in connexion by ordinary insulated
 " telegraphic wires, with a battery at the gas works, or in any
 " other convenient locality. The whole of the coils are in com-
 " munication with each other, so as to be in the circuit, and will,
 " consequently, be simultaneously demagnetised, when such
 " circuit is broken. In turning the tap to light the lamp, the bar
 " of soft iron is brought down on to the coils, which have been
 " previously magnetised, and is by them consequently held down,
 " and the tap kept open, the force of the spring being overcome
 " by the attractive power of the magnetic coils."

[Printed, 3d.]

A.D. 1857, January 8.—Nº 66.

PRESTWICH, WRIGHT.—"Improvements in gas burners."—
 (Provisional Protection only.)

" I make a small cap to fit on the ordinary gas burner, the top
 " of which I perforate, similar to fine wire gauze; or I make the
 " burner itself with the top part perforated in the same way. By
 " this plan I obtain a better light, and ensure an economization
 " in the consumption of gas."

[Printed, 3d.]

A.D. 1857, January 10.—Nº 90.

KUKLA, FRANCIS XAVIER.—"Improvements in apparatus for
 " heating stoves by gas."

" For this purpose, a metal tube or cylinder is employed, closed
 " at the upper end by a mass of metal, 'which serves to absorb
 " and radiate the heat.' This tube or cylinder is fixed at its
 " lower end, by straps, to a bar in such manner, as to admit atmo-
 " spheric air into the tube or cylinder, freely at the bottom. The
 " upper part of this tube or cylinder, but, 'below where it is closed
 " by the mass of iron,' is perforated with numerous small holes.
 " One end of a gas pipe, having a suitable regulating cock, is
 " passed through and fixed to the bar, so that the upper end of
 " the pipe rises some height into the tube or cylinder. On the
 " inside of the tube or cylinder, is a cylinder of wire gauze, which
 " descends below the parts of the tube or cylinder which are per-
 " forated. The lower part of the gauze cylinder is closed in
 " around the gas supply pipe by a cone of gauze. The gas is thus
 " admitted into the cylinder of gauze, and is there mixed with

" atmospheric air, and the two mixed together pass through the perforations in the upper part of the tube or cylinder, and are ignited. This arrangement, or combination of apparatus, is placed inside of any suitable case, forming a gas stove."

[Printed, 3d.]

A.D. 1857, January 10.—N° 93.

DESRUES, PAUL.—(Provisional Protection only.)—" Improvements in purifying gas."

" According to this invention, gas may be purified by hypochlorites generally, but in particular by that of lime (chloride of lime); these bodies seize the sulphurous compounds (principally sulphuretted hydrogen) contained in gas, without at all altering the colour of the gas, or detracting from its lighting power. By this means the gas loses its offensive odour."

" The ordinary apparatus used for purifying gas may be used with this invention; but as the purifying is effected more rapidly, apparatus to purify the same volume in a given time may be much less extensive. The hypochlorite of lime is introduced in the ordinary manner, of disposing the purifying materials into vats."

[Printed, 3d.]

A.D. 1857, January 17.—N° 147.

STEINMETZ, ANDREW.—" The improvement of circular gas burners and their chimneys, to be called the steinmetz burner and steinmetz chimney." (Provisional Protection only.)

" Firstly, it consists of two parts, the usual body; but the upper portion of the same is made moveable, being ground so as to be gas-tight and yet easily removeable for the purpose of cleaning the burner when it becomes foul by use. This contrivance will admit of there being placed within the burner a diaphragm adapted to reduce the pressure of gas, and thus secure the advantage of a regulator to a certain extent.

" Secondly, a glass or chimney for the said circular burner to intensify its light. 'This is effected' by merely bending in the lower end or bottom edge of the chimney so as to cut off a portion of the lateral current of air which tends to cool the flame."

[Printed, 3d.]

A.D. 1857, January 28.—N^o 246.

HARRIS, JOSEPH.—“Improvements in lighting gas for illumination.”—(Provisional Protection only.)

“This effect may be obtained by causing a stream of hydrogen to fall upon spongy platinum; and to applying these to the purpose of this invention I connect the platinum to the ordinary apparatus, so that the act of turning on the gas causes it to be brought contiguous to the orifice of the burner; at the same time a stream of hydrogen is allowed to pass on to the said platinum, the consequence of which will be a sufficient explosion to ignite the gas. This arrangement I apply to a series, the whole number being brought into action simultaneously, or they may be ignited separately. The sources of hydrogen gas may be those employed for other purposes.”

[Printed, 3d.]

A.D. 1857, January 30.—N^o 269.

FARRAR, JAMES.—“Improvements in apparatus for regulating the pressure and flow of gas.”—(Provisional Protection only.)

To accomplish this object the valve (of the inlet or outlet pipe) is formed with a dish or tube having conical or V-shaped openings at its lower edge or end, which dip into mercury or other fluid contained in a chamber formed around the end of the inlet or outlet pipe or chamber, so that the valve in its motion will, by means of the conical or V-shaped openings, shut off or regulate the pressure and flow of the gas when actuated by a lever or other means in connexion with apparatus partaking of the back pressure of the gas not required to be consumed at the burners. I also use a float for communicating the said back pressure.

[Printed, 3d.]

A.D. 1857, February 3.—N^o 311.

LAMING, RICHARD.—“Improvements in purifying gas, in obtaining materials useful for that purpose, and in working up into useful products certain ammoniacal and phosphatic substances obtainable as residues in the purifying of gas.”

Consisting, first, “in applying phosphate of ammonia without separation from the earthy material in which it is formed (earth

" of bones) to the manufacture of phosphorus ; for which purpose I grind it with about half its weight of charcoal or other efficacious form of carbon, and having dried the mixture I submit it in earthen retorts to a temperature gradually raised to bright redness," &c.

Second, when "sulphate of iron" has been used for the purification of gas, it is proposed to wash and filter the precipitate obtained, consisting for the most part of "sulphuret of iron," and to mix it with ground unslacked lime, magnesia, dry sawdust, carbonate of lime or magnesia, or other similar substance, and leave it to oxidise. The clear solution of sulphate of ammonia may be evaporated.

Third, "obtaining ammonia, and simultaneously combining it with the carbonic acid of impure gas, by introducing hydro-sulphate of ammonia into the gas prior to or simultaneously with its entrance into dry purifiers, charged with materials containing iron in any state, which enables it to abstract the sulphuretted hydrogen, and to undergo atmospheric revivification alternately, with the subsequent removal from the gas of its ammonia and combined carbonic acid ; but, this does not include the washing or scrubbing of impure gas with ordinary gas liquors, as practised for the purpose of making them more rich in ammoniacal compounds, even though the gas be afterwards passed through a material containing hydrated or revivifiable peroxide of iron."

Fourth, "converting solutions, containing in large or small quantities an ammoniacal hydrosulphate, mixed or not with ammoniacal carbonate, into solutions either wholly or in part of free or caustic ammonia, by the agency of such oxides or preparations or mixtures containing chemically divided iron, as will abstract the sulphuretted hydrogen without saturating or fixing the bulk of the ammonia ; also admitting water or watery solutions to drench what are known in gas works as porous mixtures of hydrated or revivifiable peroxide of iron while in the purifying vessels, preparatory to forcing through those vessels a current of air for the revivification of the purifying material which they contain."

Fifth, "the purification of gas from ammonia or ammoniacal compounds by washing it in a scrubber divided by one or more double diaphragms, each so constructed that its lower part is a basin to sustain the acting liquid, into which the upper and

" perforated part of the double diaphragm is immersed for dis-
tributing the liquid and the gas."

Sixth, "receiving the volatile products distilled from gas liquor
or ammoniacal washings into a close vessel containing sulphate
of iron in solution, together with either the subsequent separa-
tion and evaporation of the resulting liquor into sulphate of
ammonia, and the mixture and peroxidation of the iron pre-
cipitate, or the evaporation by gentle heat of the mixed products
of the distillation."

[Printed, 6d.]

A.D. 1857, February 10.—N° 377.

WALKER, WILLIAM THOMAS.—"Improvements in apparatus
used in gas works for exhausting, forcing, transmitting, and
regulating the flow of gas, and cleansing and warming gas
apparatus."

These improvements consist, first in "the use and method of
exhausting, forcing, and transmitting gas by double cylinders,
or two combined cylinders with pistons working therein, with the
four self-acting valves for inlets for the admission of gas, and
the four self-acting valves for outlets for the transmission of
gas."

Second, in "the method of instantaneously throwing either half
of the exhausting apparatus completely or partially out of action
and working either remaining half alone by the use of the shut-
off valves and the equilibrium valves before described (which
shut-off valves also save the necessity and expense of the main
inlet and outlet valves heretofore used,) also of working wholly
or partially and of having complete control over the apparatus
and the amount of gas passing in either or both of the cylinders
by means of the equilibrium valves, and of being provided with
a constant reserve to meet any exigency or accident that may
occur on a gas works."

Third, in "the combination and compact mode of arrangement
of the exhausting apparatus with its pipes and connections, and
the steam power necessary to work it, and the method of making
one framing support and carry the whole entire apparatus, in-
cluding an extra duplicate steam engine where required, and the
means of throwing either steam engine either in or out instan-
taneously, likewise the simple system shewn and described of
the gas governor's connection with the throttle valve and the

" system of working the steam engines by expansive force of steam
" on a gas works for giving motion to exhausters."

Fourth, in "the method described of cleansing exhausting apparatus by the use of steam, and this part of these improvements is applicable not only to the exhausting apparatus herein described but to all other exhausting apparatus."

Fifth, in "the general combination and arrangement of gas valves shewn and described, the methods shewn of opening and closing gas valves by means of a lever deriving its motion from an axis, with the different methods shewn of giving motion to the axis, for the purpose of opening and closing gas valves, and the means described of protecting the valve and keeping it accurately to its facing, and this mode of protection is also applicable to gas valves of any other description."

Sixth, in "the method of working the counterbalancing beam on a hardened steel knife edge against a hardened steel surface, and the compact method of fixing the pressure guages; with these exceptions this claim is limited entirely to the cheap and effective mode of constructing a governor."

Seventh, "in the improvements described for cleansing and warming gas apparatus, the application of the portable tubular steam boiler and its appurtenances, and the general combination, arrangement, and improvement of its parts, for the special uses of gas works."

[Printed, 2s. 11d.]

A.D. 1857, February 17.—Nº 457.

GREEN, HENRY.—(Provisional Protection only.)—"An improved stove to be heated by gas."

This improvement consists in constructing a gas stove with an outer casing which may contain water to be heated, as also a series of vertical tubes through which the heated air ascends and escapes at the top. A series of heating chambers are adapted at a suitable height above the burner through which the heated air from the gas jets has to pass in an upward and downward direction by which process the noxious or prejudicial properties of the products of combustion are entirely neutralized." The burners are arranged in the form of a "cone" and are set in nearly a horizontal position.

[Printed, 3d.]

A.D. 1857, February 18.—Nº 472.

GREEN, JACOB.—“ Improvements in furnaces for burning combustible gases under pressure in the manufacture of glass, iron, and other metals.”

“ These improvements consist in constructing furnaces, so as to dispense with the usual stack or chimney, the air to support combustion being forced into the ash-pit and the ‘air required,’ to complete the combustion of the gases, is forced into the furnace ‘above the fire’ from a conveniently arranged blower. The furnace is provided with one or more dampers, for the purpose of allowing the spent gases to escape, and at the same time producing a pressure in the interior of the furnace, causing the oxygen of the air to commingle with the combustible gases, thereby producing a complete combustion, and greatly economizing the consumption of fuel.”

[Printed, 6d.]

A.D. 1857, February 18.—Nº 474.

BEST, ROBERT.—“ An improvement or improvements in illumination.”

This invention consists in a combination of “gas burner and shade, in which the burner, placed out of the axis of the shade, projects a flat flame in a horizontal or nearly horizontal plane, the said flame being concentric or nearly concentric with the axis of the shade or dome.”

[Printed, 6d.]

A.D. 1857, February 23.—Nº 521.

FOOTMAN, WILLIAM.—“ Further utilising the illuminating properties of gas by improvements in burners and shades or reflectors.”—(Provisional Protection only.)

“ 1st. Improving the batswing burner by cutting or forming the slit of a conical or slightly-wedge form, or other form than a mere straight sawn slit, and smoothing, grinding, or polishing the surface of the slit, so as to produce a more even or desirable form of flame, and more perfect combustion.

“ 2nd. Adapting shades thereto made with the following improvements, with a long narrow opening at the top thereof in lieu of a large round hole, as heretofore, setting or fixing the shade in a proper position, with respect to the long narrow

“ opening, and the flame of the burner by screwing the frame down to a shoulder formed on the elbow or straight pipe, so that the flame burns lengthwise under or in the narrow opening of the shade, turning over a rim, or ear pieces, or lap of the frame, to keep the paper or other reflecting material in its position on the frame, and prevent its being thrust over and injured by the flame; such shades or reflectors being applicable to other burners or lamps having a flat flame, and may be made ornamental by scolloped edges, tinted or embossed, or gilt paper,” &c.

[Printed, 3d.]

A.D. 1857, February 23.—N° 528.

KIRKHAM, JOHN.—“ Improvements in the construction of furnaces, ovens, or kilns, for drying, baking or burning pottery or earthenware, bricks, tiles, or other similar articles, and in the means of collecting and condensing or carrying off the smoke, gases, or vapours evolved from such or other furnaces or fire-places, or that escape or arise from the retorts and other parts of the apparatus used in the manufacture of gas.”

These improvements “ relate, in the first place, to an improved mode of constructing the furnaces, ovens, or kilns, for the above-named purposes; and, second, to a means of collecting and condemning or carrying off smoke and gases or vapors, which means is not only applicable to the furnaces above referred to, but also to all furnaces, retorts, or apparatus from which such gases may be evolved.”

“ In carrying out the first part of this invention, the furnace or oven should be built with brickwork, and the crown or top arched oven, or otherwise, made close and air-tight, and the internal capacity constructed in a suitable manner for the quantity of materials required to be burnt at any one time, for which purpose one, two, or more fire-places may be constructed in the bottom part of the oven, and air is admitted over the top of the fuel from the sides or ends of the furnaces to assist the combustion of the gases evolved therefrom. The flame and heat circulates through the oven, and is then drawn or conducted through flues constructed in the bottom of the oven, and from thence is carried through a second, third, or more ovens, whereby the spare heat may be beneficially employed in drying and preparing the articles or wares to be next burnt.”

Second, "the heat and gaseous vapours are drawn or conducted, " through the ovens and flues, so that as much as possible of the " heat may be used and economized; after which the vapours are " either conducted direct to the chimney or through close con- " densing vessels containing pebble stones or other suitable " materials for increasing the contact surfaces. The vapors or " gases are drawn through the condensing vessels by fans or " other machinery suitable for such purpose, and water [or lime " water or other chemical agents] is injected in and amongst the " pebble stones contained in the condensing vessels, whereby the " gaseous vapors in passing through the condensing vessels will " be partially condensed and absorbed by the water, and any " smoke, soot, uncombined carbon, or other solid matters, will be " removed from the gases, which may then be allowed to pass " into the atmosphere." " By this means useful products are " extracted from the vapors arising from the fuel previous to " allowing the gases ultimately to escape."

" This part of the invention is also applicable to the exhausting, " collecting, and condensing, or carrying off of all gases and " vapors arising from any fuel used for heating all kinds of " boilers, coke ovens, kilns, glass-house furnaces, retorts, and " retort houses, or other distilling or heating apparatus, or any " furnace whatsoever. Also for the ventilating by exhausting, " collecting, and condensing, or carrying off the smoke and " gaseous vapors produced in retort houses, purifying houses of " gas works, or any other buildings requiring ventilating, and " which gases may be purified by being passed through the " condensing chambers before being allowed to escape into the " atmosphere."

[Printed, 2s. 2d.]

A.D. 1857, March 2.—N° 599.

WRIGHT, SAMUEL.—" Improvements in gas regulators."

These improvements "consist of a chamber or reservoir, divided " into an upper and lower compartment by a flexible diaphragm. " An inlet and outlet 'pipe' communicate with the lower com- " partment. To the flexible diaphragm is attached a central " spindle, working vertically through an aperture in the upper " part of the reservoir; to the lower end of this spindle is " attached by a short chain, or otherwise, one end of a flexible

" and moveable flap [a flexible valve] the other end of the flap
" being secured to the inlet elbow. When the flexible diaphragm
" is acted upon by an extra pressure of gas, it rises, and brings
" the moveable flap in contact with the 'mouth of the inlet pipe,'
" so as to close or partially close the opening, and thereby dimi-
" nish the quantity of gas admitted. When the extra pressure
" ceases, the diaphragm is lowered and enlarges the inlet orifice,
" so that the supply of gas to the burners is regulated and main-
" tained uniform under every variation of pressure in the main
" supply."

[Printed, 6d.]

A.D. 1857, March 3.—N° 621.

" DANRÉ, GEORGES, MOUILLARD, PIERRE FORTUNÉ
" VICTOR, and MERCIER, PIERRE ADRIEN. (Provisional
" Protection only.)—" An improved method of and apparatus for
" heating by gas."

" This invention consists of an apparatus for heating by gas,
" in which the caloric produced is radiated similarly to that of
" incandescent fuel in ordinary furnaces. A number of gas-
" distributing pipes are mounted in the frame or brickwork of the
" apparatus (or there may be only one such pipe). On or along
" each pipe is a row of single jet burners, and at a suitable dis-
" tance above them a radiating plate is set, formed with a number
" of conical apertures or orifices through it, of which there is one
" corresponding to and just over each burner, the radiating plate
" being so placed with respect to the burners, that when the gas
" is lighted each jet passes up into and through its corresponding
" hole in the plate. The radiating plate may be of fire-brick or
" metal, with roughened under surface," and of suitable form.

" Gas is admitted into the distributing pipes through a supply
" pipe furnished with a regulating tap. The air in its passage to
" the distributing pipes is made to pass through a wire cloth or
" perforated metal plate for its division into films or streams."

[Printed, 3d.]

A.D. 1857, March 5.—N° 649.

BOWER, GEORGE.—" Improvements in apparatus for manufac-
" turing gas."

This "invention relates to a construction and arrangement of
" gas apparatus, suitable either as a portable apparatus or for the

“ manufacture of gas on a large scale, and consists of a retort.
“ placed inside a case lined with fire-brick, such retort being fur-
“ nished with an Archimedean screw, for the facility of supplying
“ it with fresh material, the screw at the same time discharging
“ the coke or other carbonized substances which have been ex-
“ hausted of their gas. Each charge of the retort is led at one
“ end through a vertical pipe having a flange fixed on its upper
“ end, into which a plug is fitted ; this pipe opens into a chamber,
“ in which the screw works, and as fast as the material is ex-
“ hausted of its gas it is pushed out by the screw at the opposite
“ end, and replaced by fresh material, which is traversed through the
“ retort by occasionally turning the screw ; this may be done by a
“ winch-handle, fly-wheel, or gear-work fitted for that purpose.
“ The coke or other substances from which the gas has been ex-
“ hausted falls through a descending discharge pipe into an iron
“ vessel, or a reservoir of water, if required, and may be removed
“ in any convenient manner.”

[Printed, 10d.]

A.D. 1857, March 5.—N° 650.

THOMPSON, THOMAS JEFFERSON.—“ Improvements in the
“ construction of gasometers, whereby they are rendered appli-
“ cable to lighting railway carriages.”

To effect this the gasometer is formed in the following manner :—“ I form a rectangular tank sufficient for the supply of water to
“ a locomotive engine. The tank has no lid or opening excepting
“ a funnel, which enters the bottom of tank from back part of
“ gasometer for the purpose of filling said tank with water.
“ Round the four sides of this tank I put a thin iron sheeting,
“ about one inch from the sides of the tank, and extending above
“ the top of tank about 12 inches. This sheeting is connected
“ with the tank by a wrought-iron frame or angle iron round the
“ bottom of tank to which it is rivetted ; I thus gain a space all
“ round said water tank of one inch in breadth, which I fill
“ with water until the water is about one inch in depth over top
“ of tank. I then form the moveable part of gasometer [the
“ dome] so that it works freely up and down in this water space,
“ its working being kept true by means of guide rods, the
“ bottoms of which are fastened through the wrought-iron foun-
“ dation ring (to which the outside sheeting is rivetted), and the

" tops are kept true by means of stays to side plates. Upon the moveable part of the gasometer there are guides fastened to work upon these rods; the uppermost guide to each rod (which works above the water level) has a spring catch, which works in a ratchet fixed upon the guide rod, to prevent any jumping of gasometer upon a rough road."

" I also propose to dispense with the counterbalance weights commonly employed, and to use in lieu thereof guides and spring catches."

" In adapting this improved gasometer to the lighting of rail-way carriages proceed as follows:—The connection of the different carriages is effected by means of vulcanized india-rubber tubes, which are coupled to the cut-off apparatus, which is permanently fixed upon each end of every carriage, and consists in a small branch pipe, which when the gas is turned on and the carriages coupled is kept in its proper position by means of a spring; but when any strain comes upon the aforesaid coupling pipe, from the carriages becoming detached, or from other causes, the strain upon the pipe will then draw the cut-off pipe out at right angles to the end of the carriage, and thus turn off the gas. The union joint upon the end of the pipe cannot be unscrewed without first turning off gas, as the plate upon which the cut-off pipe is screwed has two wings, which project round the union joint, thereby preventing any possibility of its being disengaged while the gas is turned on in that cut-off pipe, thereby preventing escape and loss of same." The moveable or dome part of this gasometer may in some cases, in preference, be combined with the brake van, instead of the water tank.

[Printed, 1s. 3d.]

A.D. 1857, March 6.—N° 660.

DANRÉ, GEORGES, MOUILLARD, PIERRE FORTUNÉ VICTOR, and MERCIER, PIERRE ADRIEN.—(Provisional Protection only).—" Improvements in carbonizing or distilling wood, peat, oilcake, coal, and other substances for the production of gas for lighting in carburetting or increasing the illuminating effect of and in compressing gas, also in the apparatuses employed for such purposes."

These consist, first, in a retort provided with " outflow pipe flush with the bottom," an " inner cap for concentrating the

" heat," an " internal vessel containing the material to be carbonized, to slide in and out," &c.

Second, in "the method of carburetting gas for the purpose of enriching it as fast as it is produced by the distilling apparatus." The apparatus employed contains a certain number of "carbureting retorts," "a drying retort heated by the waste heat," and a "boiler on the vessel containing the oils or carburetting fluids heated by the waste heat of the retorts."

Third, relates to the "compression of extra rich and pure gas," for lighting purposes.

[Printed, 4d.]

A.D. 1857, March 9.—N° 683.

SMITH, HENRY RICHARD.—" Improvements in manufacturing and purifying gas made from coal or other bituminous substances for illumination."

These "improvements in the manufacture of gas consist, first, in the use of a conical-shaped vertical retort, which shape and position greatly conduces to a more uniform distribution of the heat from the furnace, and thereby effect a thorough conversion of all the gaseous matter with which the retort may be charged, extracting a much larger quantity of gas than can be obtained from the same amount of coal or other matter than is generated in the retorts as at present constructed."

And, secondly, "in the combination [in one vessel] of "the hydraulic condenser with the lime purifier, for, inasmuch as (by the use of my form of retort) a larger proportion of the coal or charge is converted into gas, so in proportion is there a smaller quantity of refuse in the shape of liquid tar, and therefore the condenser is not required so large in proportion to the refiner as in the case where horizontal retorts are used." The retort referred to is placed vertically and is widest at the lower end."

[Printed, 9d.]

A.D. 1857, March 9.—N° 691.

KNOX, ANDREW, and ROBSON, THOMAS.—" An improved gas regulator." This "regulator consists of an external case, with apertures for admitting gas from a main, and for allowing it to escape to the burners. Inside the case is a chamber fitted

" with a conical valve [or two equilibrium valves connected together]. The inlet aperture leads directly into this chamber, " and no gas can pass through the regulator without entering it. " Over this chamber and at a convenient distance between it and " the top of the case is fitted a diaphragm of oiled silk or other " like suitable material. To the centre of the diaphragm is " affixed a tapped nut, through which is inserted a screwed " spindle, the bottom of which terminates in an eye, on which is " hooked the valve or valves before named, or it may be made in " a piece with the spindle. Upon the top of the diaphragm we " place a weight, which we regulate according to the pressure at " which the gas is to be allowed to escape from the regulator."

" Over the flexible diaphragm is fixed in an air-tight manner a " covering of gutta percha, through which a very small hole is " made. The resistance of the air as it passes out or returns " through the small space modifies or restrains any sudden pres- " sure upon the diaphragm, and prevents the sudden opening or " closing of the valves."

[Printed, 5d.]

A.D. 1857, March 11.—N^o 708.

HUMFRYS, JOHN ROBERT REID.—(Provisional Protection only.)
—“ Improvements in apparatus for burning gas.”

These consist, first, in adapting to any suitable burner pieces of sheet metal or tubes of the requisite form, in such a manner that the air required for the combustion of the gas will be directed and caused to impinge or rush upon the gas as it issues from the orifice of the burner, whereby the gas will be consumed more perfectly, the action being “ somewhat on the principle of the “ blow pipe.”

Second, “ consists in the use of curved plates or other apparatus “ for imparting one or more angular directions to gas and air “ before they issue from the burning orifice or orifices, whereby “ the liability to combustion below the proper level is obviated;” also in causing “ gas and air to pass from contiguous passages, so “ as to be delivered into an outer chamber constituting a reser- “ voir” before being passed through the wire gauze to be burned.

Among other applications of this invention it may be employed for singeing yarns and fabrics.

[Printed, 3d.]

A.D. 1857, March 18.—Nº 759.

GREEN, JACOB.—(Provisional Protection only.)—“ Improvements in gas-consuming furnaces and in the automatic action of the controlling valves or dampers of the said furnaces.”

“ The nature of these improvements consist in so regulating and controlling the entrance of a blast from a blowing apparatus into furnaces of steam boilers that the introduction of said blast in the quantity or proportion of hot and cold air or in the quantity of air thrown into the fire space or under the grate may be self-regulating by means of a damper placed at the mouth of the stack, or in any other suitable position.”

[Printed, 5d.]

A.D. 1857, March 31.—Nº 888.

HILLS, FRANK CLARKE.—(Provisional Protection only.)—“ Improvements in manufacturing gas, and in apparatus connected therewith.”

The “ first improvement consists in preventing, as far as possible, the escape of smoke, &c. into the retort house, and this is effected by placing a hood in front of the mouth-piece of each retort, which hood should rise a few inches above the top of the retort, but having the front of the hood as low or a little lower than the inside top of the retort, so as to form an inverted box or pocket to receive the smoke, &c., which may escape from the retort. The sides of the hood should come down as low as the bottom of the retort. At the upper part of the hood (which may be made of cast or wrought iron, and of any convenient form,) a pipe is placed (of sufficient capacity to take off all the smoke, &c. generated) to connect the hoods to the flues or fire spaces of the bed of retorts. This pipe is to be furnished with a valve or slide to open or close the connection between the hood and the flues at pleasure.”

The second “ improvement is to prevent tar or tarry matter from being condensed or deposited in the mouth-piece of the retorts, as it usually is in the ordinary way of working, and which, coming in contact with the hot coke, which is drawn over it from the retort, causes much smoke, &c. This deposit of tar is to a great extent prevented, if not wholly, by having the bottom of the mouth-piece of the retort made to slope inwards

" from the door to the red hot part of the retort, so that any art
" that may condense in the ascension pipe or mouth-piece will run
" down the inclined plane from the door on to the red hot part of
" the retort, and be converted into coke or cinder, and the mouth-
" piece being thus free from tar, little or no smoke will be made
" when the hot coke is drawn through it. A gutter or inclined
" plane may also be fixed on the door of the retort under the
" ascension pipe to carry any tar that may drop into it on to the
" red hot part of the retort."

And lastly, consists in cooling "the coke with lime water instead
" of common water, which will to a considerable extent prevent
" the escape of sulphuretted hydrogen and sulphurous acid gas,
" which takes place when common water is used."

[Printed, 3d.]

A.D. 1857, April 1.—Nº 903.

PERIN, LAMBERT.—(Provisional Protection only.)—"The easy
discovery of flaws and escapes in gas pipes."

This may be effected by the use of an air-tight vessel, of some capacity, being made to communicate with the gas piping. If the air in the vessel be expanded by heat, or condensed by cold, and the gas piping perfectly tight, this expansion or contraction will be shewn by a glass tube containing mercury; if, however, there is an escape of gas, the fact will be made known by the gas rushing through the hole in the piping, and the mercury returning to its original level.

[Printed, 3d.]

A.D. 1857, April 4.—Nº 953.

HANSOR, JAMES.—(Provisional Protection only.)—"Improvements in apparatus for consuming gas."

" This invention relates, firstly, to a mode of adjusting the supply of air to Argand gas burners, to suit various pressures and qualities of gas. To effect that object, the deflector is mounted loosely on a central stem, which stands up from the arms of the burner, and this stem I tap with a coarse thread, to receive the deflector, and permit of its being raised and lowered as desired. The under side of the deflector is made bright either by using a polished surface of metal, or an enamel that will stand the action of heat."

" In order to facilitate the adjustment of the gas cock to the requirements of the consumer, or the capacity of the burner, it is proposed to apply a pointer thereto, and to attach an index to the supply pipe, by which means the attendant will be enabled to adjust the cock of the burner to any required position, and thus ensure a proper supply of gas thereto."

[Printed, 3d.]

A.D. 1857, April 7.—Nº 970.

ROGERS, EBENEZER.—" Improved methods of applying fuel for heating purposes."

This invention consists, first, " in converting the combustible parts of coal, coke, and other carbonaceous fuel into gases, by imperfect combustion, by means of a blast of cold air in a close blast furnace or generator, constructed of fire-brick, or other suitable refractory material, without fire-bars, and with a receptacle below the blast pipe or tuyère, from which the fused earthy parts of the fuel may be occasionally drawn off such earthy parts, when refractory, being made fusible by adding a suitable flux to the fuel. The production of carbonic acid is avoided by keeping in the generator, at all times, a sufficient quantity and depth of fuel, in proportion to the quantity and pressure of the air blown in. The air may be drawn through the fuel by a pump, instead of being forced by a blast."

" Second, in converting coal, tar, gas, refuse, and other substances, containing hydrogen and carbon, into combustible gases, by mixing them with coke, or other solid fuel, or projecting them upon incandescent fuel, and burning them in blast furnaces, as above described."

" Third, in leading the gases generated in either of the ways above described, through suitable flues or passages, to the furnace or place where the useful heating effect is to be produced; and immediately behind the place where the combustion is to be effected, is introduced a blast of cold atmospheric air, in the form of a thin sheet or stream, in such a manner, as to mix thoroughly with the combustible gases, and as nearly as may be in the exact proportion necessary for perfect combustion, unless for any special manufacturing purpose, an excess, either of atmospheric air, or of combustible gases, is required. The gases and air so mixed are burned without admitting air otherwise than as aforesaid."

"Fourth, in delivering the combustible gases produced as above described (and either purified from sulphur or not), through flues or pipes, to private houses, shops, hotels, manufactoryes, and other places, in order to be burnt for heating purposes, with or without a blast of air as above described, or otherwise in the manner in which carburetted hydrogen gas is, or may be, burnt for the like purposes."

[Printed, 7d.]

A.D. 1857, April 11.—N° 1027.

WILTON, THOMAS, and HUGGETT, JOHN.—(Provisional Protection only.)—"An apparatus for regulating the flow or supply of gas."

"The object of this invention is to prevent the necessity of turning off and on gas to street lights, and by means of our apparatus, during the hours the lights are not required, a minimum quantity only flows through it. This operation is effected by diminishing the pressure at the works, or elsewhere, whereby a valve in the apparatus closes, and only admits gas through a very narrow tube or orifice. On the full pressure being applied, the pressure opens a valve, and admits the full supply of gas to pass through it to the burner. Under no circumstances is the gas ever completely extinguished, when the apparatus is in action."

[Printed, 3d.]

A.D. 1857, April 13.—N° 1036.

RICHARDSON, THOMAS, and BROWELL, EDMUND JOHN JASPER.—"Improvements in treating old or waste railway wood sleepers and bearers, and in preparing or preserving wood for railway sleepers and bearers, and other works."

These improvements consist, "first, in the distilling (in apparatus such as is used in making coal gas), old or waste railway sleepers or bearers, to obtain tar or products therefrom, suitable for preparing other wood for railway sleepers, or bearers, and other works."

And, "second, in combining with tar, used for preparing or preserving wood for railway sleepers and bearers, and other works, a chemical solvent, so as to render it sufficiently fluid to be used without separating some of the substances which it

" contains by distillation." For this purpose, it is preferred "to mix one of the following saline solutions with the tar in about equal volumes, viz., a solution of caustic soda of about 1·13 specific gravity; or the liquor, known in the alkali trade under the term of red liquor, with a specific gravity of about 1·30 These mixed fluids are heated to a temperature of from 90° to 100° Fahrenheit; and this warm solution is forced into the cylinder containing the timber with the usual precautions."

[Printed, 3d.]

A.D. 1857, April 14.—N° 1060.

NEWTON, WILLIAM EDWARD.—(A communication.)—" Improved means of lighting gas, for illuminating and other purposes."

This invention consists, firstly, "in lighting the gas [more particularly when the burners are not easily acceptable], by the heat generated or developed by an electric current, in a number of conductors of fine platina, or other wire, curled up and arranged, one near the orifice of each of the burners to be lighted, the said conductors forming connections between breaks, in a conducting wire of much larger capacity connecting the poles of a battery or other apparatus, for generating a current of electricity."

" Another object of the invention is to bring the service or supply cock, by which the gas is supplied to a number of burners that are to be lighted by electricity, to be opened or closed, or made to regulate the said supply to the said burners, under the control of a person at a distant part of a building, or other distant place; and to this end the second part of the invention consists, in furnishing the service or supply cock with a ratchet wheel, or its equivalent, to be engaged by a pawl or dog or the equivalent thereof, attached to one end of a lever, whose opposite end has attached to it the armature of an electromagnet, which is made to attract the said armature by an electric current, which may be generated by the same battery or generating apparatus, employed for the purpose of generating the current, by which the lighting is effected, requiring only a change of circuit, effected by a proper arrangement of conductors and a key. By closing and opening the circuit in which the magnet is placed, the armature is alternately attracted towards

" the magnet, by the attraction produced therein by the current,
" and drawn away therefrom by a spring, and by that means
" motion is given to the pawl, to operate the ratchet or other wheel,
" and turn the cock."

[Printed, 7d.]

A.D. 1857, April 15.—N^o 1067.

BRUNEL, BONNETT FREDERICK.—“Improvements in raising sunken vessels and other submerged structures and articles, and in machinery and apparatus employed therein.”

This invention is based on the use of hydrogen gas (in preference) as a raising power, which power may be applied by the introduction of the gas into, and consequent displacement of the water from the interior of the sunken vessel itself, or the gas may be introduced into separate vessels called “subleveurs” suitably attached to the sunken object. The vessel in which the hydrogen gas is generated called a “gazogene” may consist of a “barrel of thick wooden staves bound by metal hoops.” One end of this vessel should be made of wood and be provided with suitable pipes, valves, &c., and the other of copper in preference. The copper end is provided with a suitable opening for the admission of a “cylindrical net of copper wire” containing the zinc to be acted upon by the acid also introduced. This copper net is called a “diaphragm” and is attached to the stopper which closes the opening. The whole is made gas and water tight by screwing an iron disc over the stopper and tight to the copper bottom. By this means when the gazogene is turned with its wooden end downwards the acid leaves the zinc and the production of hydrogen is arrested, but when turned again on the other end the action immediately recommences and is stimulated by the galvanic action arising between the zinc and the copper.

“The ‘subleveur’ is a case constructed in iron for the sake of strength and great rigidity, made of a cylindrical as well as of a spherical shape” provided with suitable taps and plugs and rings for lashings.

The specification describes at length the practical modes of applying the hydrogen, and of the subleveur, directions for the divers, the application of stopping and caulking apparatus, the construction of moveable syphons, &c.

[Printed, 2s.]

A.D. 1857, April 16.—Nº 1072.

SUDBURY, JOHN, and LINSELL, ALFRED WILLIAM.—“ An “ improved gas regulator.”

“ The object of this instrument is to maintain an uniform supply of gas to the burners unaffected by any varying pressure in the mains. For this purpose the gas from the supply pipe is admitted through a tubular passage into a chamber, the upper part of which is closed by a flexible diaphragm; from this diaphragm is suspended a piston, working freely up and down in the tubular passage which has a hole or holes cut in its side for the gas to pass through, an outlet orifice at the side of the chamber conducts the gas to the burners. Any increase of pressure beyond the regulated amount raises the diaphragm and with it the piston thereby partly closing the holes in the side of the tubular passage, and checking the admission of gas to the burners. When this extra pressure is diminished the diaphragm and piston falls uncovering more of the holes and presenting increased facility for the entrance of the gas to the burners. The holes in the side of the tubular passage may be of any approved form but we prefer to make them triangular.”

By another modification the mouth of the inlet pipe may be more or less closed by a jointed “ curvilinear faced valve” actuated by the diaphragm. By applying a screw to this valve it may be made to act as the stop valve.

[Printed, 6d.]

A.D. 1857, April 17.—Nº 1089.

MESSENGER, SAMUEL, and FLETCHER, THEODORE.—(Provisional Protection only.)—“ Certain improvements in gas burners.”

“ The object of this invention is so to divide the flame or jets of gas that it shall issue from the burners in very thin films which may be so formed around the burner as to present the forms of leaves curving outward and upward in such a way that they shall correspond with the globular shape of the glasses for which they are particularly applicable.”

“ And the manner in which we effect this is by taking a disc we pierce with two or more slots, varying in length and breadth according to the amount of light required, and which slots may be straight or curved, but pierced concentric with the outer edge.

“ These discs so pierced we raise into a more or less convex form : “ the inclination of the pierce holes is by this means thrown outward for the purpose of spreading the flame. The discs so formed we apply to the regular common iron bodies or tips “ tapped at the bottom end or otherwise fitted for attaching them “ to the gas ways.”

“ This mode of manufacturing gas burners is capable of great diversification.”

[Printed, 8d.]

A.D. 1857, April 20.—N° 1114.

NEWTON, WILLIAM EDWARD.—(A communication.)—“ Improvements in meters for measuring the flow of gas, water, or other fluids.”

This invention relates to fluid meters or that description known as “ flexible diaphragm meters” and consists, first, “ in transmitting motion from the flexible diaphragm to the valve gear “ by means of a shifter, a plate, or other equivalent contrivance, “ attached to a shaft at one side of the measuring box, and swinging “ within the said box by means of the movement of the “ flexible diaphragm, and thus giving to the said shaft a vibrating “ motion to operate the valve gear.”

“ Second, in enclosing the shifter, or its equivalent, by which “ motion is transmitted from the flexible diaphragm to the valve “ gear, so as to prevent leakage at the opening in the measuring “ box through which the shifter works, without a stuffing box or “ other packed working joint, by making the diaphragm double “ and placing the shifter between the two portions thereof, and “ extending the said portions to form a packing to surround a “ fixed tube through which the shifter shaft works.”

Third, in the combination of the shifter shaft with a tripping lever by means of an arm attached to the shifter shaft, and a lever in connection with the tripping lever whereby it is reversed and the valves shifted just at the moment when one chamber has filled and another has been emptied.

[Printed, 7d.]

A.D. 1857, April 21.—N° 1122.

MARTEN, EDWIN.—(Provisional Protection only.)—“ Improvements in apparatus for regulating the pressure and supply of gas.”

“ For these purposes the supply pipe communicates with a chamber having one side connected by flexible gas-tight material

“ in such manner that the moveable side may be able to move to
 “ and fro freely according to the pressure of the gas in the chamber.
 “ With this chamber the continuation of the supply pipe is at-
 “ tached. There is a valve which is capable of sliding over the inlet
 “ passage to the chamber so as to cover it more or less, and its
 “ movement depends on the movement of the moveable side of the
 “ chamber, the valve being connected to such moveable side of the
 “ chamber. In order to regulate the pressure of the supply of gas
 “ the moveable side of the chamber is acted on by one end of a
 “ weighted lever and according as the weight is varied in its
 “ position on the lever so will be the pressure of the gas supplied.
 “ This apparatus may be applied to and used in a gas meter or it
 “ may be applied to the supply pipe separate from a meter.”

[Printed, 3d.]

A.D. 1857, April 25.—N° 1166.

TONKS, STEPHEN, BREEDON, JOSEPH, and BREEDON,
 WILLIAM.—(Provisional Protection only.)—(A communication.)—
 “ A new or improved gas burner.”

“ This invention consists of an argand gas burner, constructed
 “ of earthenware, china, or other earthy or semi-vitreous sub-
 “ stance. The burner is made of the same shape or nearly the
 “ same shape as the ordinary metal argand burner. The holes
 “ through which the gas issues from the top of the burner are
 “ drilled therein before the final burning or glazing of the china
 “ or earthenware. The burner is joined to the metal pipe by
 “ which the gas is supplied by any suitable method of joining
 “ metal and earthy or semi-vitreous substances, the gas may either
 “ be introduced into the burner by a hole on the side and near
 “ the bottom thereof, or through holes at the bottom.”

[Printed, 3d.]

A.D. 1857, April 27.—N° 1179.

LARCHIER, AMABLE VICTOR FELIX.—(Provisional Protection
 only.)—(A communication from Lavezzari Emile.)—“ Improve-
 “ ments in the manufacture of gas.”

“ In the manufacture of cotton, wool, and other fibrous sub-
 “ stances, a considerable quantity of refuse fibrous matter is
 “ obtained from the carding and combing, and other operations,
 “ and this refuse is frequently impregnated with oil or grease
 “ originally contained in the fibrous matter, or added to it either

“ intentionally or accidentally. This refuse is now of little or no value. Gas is manufactured for illuminating or heating purposes by distilling this refuse in retorts in a similar manner to that in which coal gas is manufactured, but a lower temperature than that employed for coal is sufficient for the distillation of the refuse. The gas is purified in a similar manner to that in which coal gas or oil gas is purified.”

[Printed, 3d.]

A.D. 1857, April 27.—Nº 1187.

ROTCH, THOMAS DICKASON.—(A communication from Hayes, Augustus Allen.)—“ Improvements in gas generators.”

This invention relates to an improved substitute for the mode of producing gas by means of two retorts, in one of which the vapors are distilled, and in the other and hotter the gas is produced, and also as a substitute for “diaphragm retorts,” consisting of various devices for passing vapours through coke or other materials, and consists in adapting to the external part (in preference) of a retort one or more conduits, “led from the back part of short or the central part of long retorts, directly to the socket of the stand pipe, whether the latter be on the mouth-piece or on the retort, and this socket should not open into the mouth-piece or retort, but should receive the conduit on one side, where it opens; and on the opposite side of the socket there should be an opening or short conduit, which should be open when the retort is open, and closed when the door fitting both mouth-piece and conduit is closed.” It is of importance to regulate the size of these conduits,” according to the coal used, so that the tar and other vapours on passing through them will be effectually converted into permanent gas.

[Printed, 7d.]

A.D. 1857, April 28.—Nº 1200.

CHADWICK, DAVID, and FROST, HERBERT.—“ Improvements in apparatus for measuring water and other liquids and gas, applicable also to the purpose of obtaining motive power.”

This invention consists, first, “in the employment of moving cylinders arranged so as to slide, after the manner of telescopes, as chambers for measuring, by their enlargement or elongation, and return motion, the fluid being admitted by any suitable arrangement of valves, and also in the employment of arrange-

" ments for shifting such valves, consisting, firstly, in the employment of a weighted lever, attached to the cylinder, moving in a slot, so as to prevent the change, until the cylinder shall have travelled a certain distance; and, secondly, in the employment of a chain or band passing over a pulley and actuating a tumbling lever."

" Second, refers to oscillating or rocking cylinders of metal or other rigid material, and consists in causing the piston after it has travelled a certain distance to arrive in contact with a lever mounted upon an axis, which passes through the cylinder and carries a catch; this catch being thus moved allows the oscillation or rocking to take place."

" Third, refers to oscillating or rocking cylinders or chambers, which it is proposed to apply to those constructed of flexible materials as well as to those on the telescopic principle above alluded to, and consists in the application of cocks or valves for the induction and eduction passages at the centre of oscillation."

" Fourth, consists in the employment of india-rubber as springs for keeping 'cupped leather packing' of pistons in contact with cylinders of meters."

" Fifth, refers specially to such oscillating cylinders or chambers of meters as are constructed with flexible materials, and consists in the application of surfaces along which the expanding chambers travel, acting thus as supports, but ceasing to do so at a certain point, at which the oscillation or rocking is then allowed."

" Sixth, consists in the combination of three or four flexible cylinders or rigid cylinders or chambers with telescopic sliding movements, so combined by means of suitable valves that one or two of such cylinders or chambers are being filled and the others emptied simultaneously."

" Seventh, relates to water meters generally, and consists in a method of causing the valves thereof to be changed in position. For this purpose we avail ourselves of the force of the fluid, and cause it to act upon pistons, diaphragms, or other apparatus not concerned in the measurement, so as to shift the valves, by which the water enters and is discharged from the cylinders or chambers."

" These improvements are described as applied to the purpose of measuring water, but they are also applicable to measuring gas, and also as motive-power engines to be worked by steam, water, or other fluid, for which purpose they will be constructed

" of dimensions and strength according to the power desired and
" pressure employed."

[Printed, 1s.]

A.D. 1857, May 2.—N° 1236.

HELY, ALFRED AUGUSTUS DE REGINALD.—(Provisional Protection only.)—"Improvements applicable in the burning of gas."

The object of this invention is to diminish the injurious and obnoxious effects produced in the burning of gas, and may be carried out "by stopping the upper orifice of a common gas glass shade, or chimney, with a hollow lid of any sufficient heat-resisting material completely closed at the top and sides, but ventilated at the bottom where it projects at one or more places beyond the said orifice by apertures, which in their aggregate area should not be less than the area of the lower orifice of the said shade or chimney; or by fitting the upper orifice of a common gas glass shade or chimney with a projecting piece or pieces of any sufficient heat-resisting material so joined to a lid or lids of the same nature as to leave the desired area of escape between the lid and the projecting piece."

[Printed, 3d.]

A.D. 1857, May 8.—N° 1303.

DARBY, CHARLES EDWARD.—"Improvements in collecting the inflammable gases generated in blast furnaces."

" This invention has for its object improvements for collecting the inflammable gases generated in blast furnaces, and consists in collecting the gases by means of the pipe, which descends down through the open mouth of the furnace [or passes through the side of the furnace] and dips a distance into the coal, ore, and other materials with which the furnace is charged, or by means of a pipe passing through the side of the furnace, and penetrating into the coal ore and other material until it arrives at or approaches near the centre or axis of the furnace.

" The end of the pipe within the furnace may be protected with an external case, between which and the exterior of the tube water may be caused to circulate in the manner of a water tuyère."

[Printed, 5d.]

A.D. 1857, May 13.—N° 1352.

PEAK, JOHN.—(Provisional Protection only.)—“Improvements
“ in the manufacture of gas.”

“ To manufacture gas from tar, resin, or the products derived
“ therefrom, by distillation either from those products alone or
“ with the addition of water or steam, my process is as follows:—

“ I drop the said products into a retort filled with charcoal or
“ other suitable substance, from which it passes in a state of
“ decomposition into another retort, or divisions of the same retort,
“ and pass it from thence into the hydraulic main direct to the
“ gasometer.”

[Printed, 3d.]

A.D. 1857, May 19.—N° 1401.

CARNABY, JOHN.—(Provisional Protection only.)—An im-
“ proved registering index for gas and other meters.”

These consist, first, in adapting together suitable toothed wheels
to work into each other to register decimaly or otherwise.

Second, in locking the second and succeeding wheels while at
rest by means of suitable friction wheels and catch levers.

Third, in suitably detaching the teeth or catch of the levers by
means of a cam motion or otherwise.

[Printed, 3d.]

A.D. 1857, May 20.—N° 1417.

KEOCH, HENRY, and KEOCH, FFRENCH AUGUSTUS.—
(Provisional Protection only.)—“Lighting the public gas lamps
“ in the cities and towns of Great Britain and Ireland by
“ electricity, and for turning off and on the gas to same simul-
“ taneously.”

This invention consists in applying electricity through wires
insulated by means of gutta percha, to the gas burners for the
purpose of igniting the gas; and in turning on the gas in one or
more entire streets by one operation, by means of a rod laid
suitably along the street and under the gas lamps, actuated by a
rack and pinion movement. At each lamp the gas tap of the
form of a small wheel is placed so that it may be actuated by the
sliding rod. The whole is enclosed in suitable casings.

[Printed, 5d.]

A.D. 1857, May 20.—N° 1428.

KEMP, EDWARD CURTIS.—“Improvements in chandelier or “other pendent gas lights, and in the fittings for the same.”

These consist, first, “in forming the shade and curtain of glass “shades or globes in one piece.” The glass of the globe is extended downwards forming a curtain of glass. Ornamental glass pendants may be suspended from the edge of this curtain, or from curved arms attached to the gallery. “The gallery or shade “holder consists of a ring or centre carried by a cross bar and “socket which fits on the burner or gas pipe, and is thereby “supported,” and the shade is steadied by a number of wires or stems fixed on the ring.

Second, consists in an arrangement of gas fittings for pendent single burners, whereby part of the glass globe shade is attached to the stem suspended from the ceiling, and the other part to the sliding up and down interior tube. The pendent gas tube therefore enters the lower portion of the glass shade or globe at the top. When the lower half is pushed up towards the upper stationary half, one globe will appear to be formed as provision is made for covering the joining.

[Printed, 1s.]

A.D. 1857, May 25.—N° 1475.

MILLE, MARIN JOSEPH ALPHONSE.—(Provisional Protection only.)—“Improvements in producing gas.”

This “invention relates to a new combination of matters or “materials for the manufacture of gas used for lighting and “heating.”

“It consists of coals, from 30 to 20 parts.
“Flowers or blossoms of elm or any other kind of trees,
“35 to 40 parts.
“The stones or kernels of all kinds of fruits $\frac{35}{100}$ to $\frac{40}{100}$ parts.
“These materials are mixed together, and are treated in retorts
“in the ordinary manner, and the gas purified by the ordinary
“apparatus.”

[Printed, 3d.]

A.D. 1857, June 2.—N° 1555.

STEVENS, JAMES.—“Improvements in water gas meters.”

To effect these improvements, first, “the float of a water gas “meter is connected to one part or end of a lever, and another

" part or end of such lever is attached, by a suitable rod, to a valve acting on the gas supply pipe of the meter, so that when the meter is tilted [for the purposes of fraud], the valve will be closed; and in order to prevent the water being withdrawn from the meter, the float and lever act on another valve, so as to close the hydraulic or water tube. The float and lever being acted on by the variation in the height of the water in the meter, produced by the variation of pressure of gas therein, regulate the supply of gas according to the number of burners which are for the time being in use."

[Printed, 6d.]

A.D. 1857, June 3.—Nº 1566.

BROOMAN, RICHARD ARCHIBALD.—(A communication.)—(Provisional Protection only.)—"Improvements in gas burners."

"This invention consists in the employment of a supplemental cap to a gas jet or burner, and of such description as shall cause the issue of the gas in a flat jet, of which the 'fish-tail burner,' so called, may be given as an example."

"By means of this appliance, a saving of gas, or an increased illumination is obtained."

[Printed, 3d.]

A.D. 1857, June 9.—Nº 1612.

GEDGE, JOHN.—"Improvements in constructing gas retorts in the furnaces of steam engines, or other furnaces."—(A communication from Nicholas Delannoy.)

"The object of this invention is to employ the caloric generated in the furnaces of steam engines, or other furnaces, in the distillation of gas."

The drawings attached to the specification "shew the position of a retort in the furnace of a steam engine, placed about two inches from the back of the chimney, and the same distance crossways beneath the generator. This retort, which is supported upon the interior masonry of the furnace, is protected, upon the side facing the fireplace, by a refractory plate, whereby contact with the fire, where it is fiercest, is prevented. This retort, which has a length of five feet and one inch, and a diameter of eleven inches, occupies the entire breadth of the furnace, projecting nine inches beyond the masonry of the

" furnace. The length and elevation of the retort will vary with that of the furnace. An escape pipe, placed above and at the extreme end of the retort, permits the passage of the gas to a scrubber, and thence through purifiers to the gasholder."

[Printed, 9d.]

A.D. 1857, June 10.—N° 1632.

LEMOINE, ETIENNE.—Improvements in gas meters.

These consist, first, in introducing a strong partition plate between the lower opening of the entrance pipe for the gas, and the float valve, to ensure its not being lifted or tampered with.

Second, in applying a "ball valve" to the draw off pipe from the reservoir, so that it will close the tap, if an attempt be made to abstract water by suction; in providing also, with a ball valve, the lower end of the pipe, which supplies the measuring drum with water, and in placing it out of the direct line of the water entrance pipe, in order to prevent any possibility of reaching the ball, by introducing a wire or other instrument, for the purposes of fraud, as well as to prevent the lifting up of the ball by suction. To prevent the piercing of the partition plate by a cutting instrument, it should be made from tempered steel. Suitable valves, overflow pipes, &c., are provided.

[Printed, 5d.]

A.D. 1857, June 13.—N° 1659.

KITE, JAMES.—(Provisional Protection only.)—" Improvements in apparatus for detection of flaws or escapes in gas pipes, joints, and taps."

" This is an apparatus consisting of a curved tube or pipe containing water or other suitable fluids, one or both ends of the tube being fitted with a tap or not, to be opened or closed at pleasure.

" The tube is attached to the pipes supplied with gas by the main and the pipes to be tested being charged from the main the pressure of the gas will indicate by the position of the fluid in the tube whether there be an escape of gas."

[Printed, 3d.]

A.D. 1857, June 25.—N° 1790.

BOUGH, WILLIAM.—(Provisional Protection only.)—“Improvements in lamps for burning resin and other oils and fluids; and also an improvement in argand gas burners.”

These consist, first, in inserting a cylinder within the interior of the circular burner, and into the bottom of it a tube, through which the oil flows up to the burner.

Second, in placing on the top of the cylinder a button made of talc in preference.

[Printed, 3d.]

A.D. 1857, June 29.—N° 1823.

MALTBY, WILLIAM.—(Provisional Protection only.)—“Improvements in the mode of extracting ammonia and other compounds from gas, gas liquor, sewerage, and other substances.”

“In extracting ammonia from gas, I cause in preference the latter to flow through a vessel containing lime, and then through another vessel containing oil, or other fatty matter; the action of the oil or fatty matter being to cause the ammonia to leave the gas and enter into combination with it, forming a new compound. By treating this oily compound with hydro-chloric, sulphuric, or other acids, the oil is set free, and a salt of ammonia is formed, which may be obtained in the usual manner. The oil may again and again be used for the same purpose.”

“When I make use of a metallic salt or oxide for removing the sulphuretted hydrogen and sulphur, I propose to use the waste products of copper and zinc resulting from the action of the galvanic and other batteries employed for telegraphic, electro-plating, and other similar purposes.”

“Another method which I propose to employ for removing the sulphuretted hydrogen, ammonia, and other impurities from gas, gas liquor, or sewerage, and which I prefer, is as follows: —Take a quantity of litharge alone or mixed with lime or common salt, one or either, by boiling, or otherwise; pass the gas or liquor over or through the latter, and afterwards through the vessel of oil before described, the ammonia being separated from the oil by an acid, as before mentioned.”

“When the lime which has been used for purifying has become saturated with foul gases, I propose to repurify it by passing steam from water, mixed or unmixed with atmospheric air,

" through it, and afterwards to pass the same steam, with the impurities it then has suspended or contained in it, through the vessel of oil, where the ammonia and naptha will be taken from it, and the sulphurous and other gases may be conducted into fires, or into a chimney, or otherwise got rid of."

[Printed, 3d.]

A.D. 1857, June 30.—N° 1824.

PITMAN, JOHN TALBOT.—“An improved method of making carburetted hydrogen gas.”

These improvements consist, first, in “passing the products of the destructive distillation of coal and other substances yielding carburetted hydrogen gas through or over the surfaces of fused metals, fusible at a low temperature,” such as lead, zinc, tin, antimony, bismuth, &c., contained in suitable retorts, “thereby facilitating the production of carburetted hydrogen gas, by presenting to the material to be formed into gas a fluid red-hot metallic surface, which rapidly conducts heat, thereby evolving the gas with a fire of smaller volume and intensity than is now used for an equal quantity of gaseous products.”

[Printed, 7d.]

A.D. 1857, July 3.—N° 1860.

GARDNER, JOHN EDMUND.—(Provisional Protection only.)—“Improvements in illuminated clocks, and in the apparatus employed for lighting the same.”

This invention consists, first, “in forming the dials of illuminated clocks of a semi-opaque glass, known commercially as patent enamelled flattened flint glass.

“Secondly, in regulating the gas supplied to the burners of illuminated clocks by means of an ordinary dry regulator, constructed with a cover, which serves to receive any gas which may escape, and with a pipe for conveying such gas to the exterior of the building in which the gas is used.

“Thirdly, in measuring the gas supplied to such burners by means of dry meters, in which the valves are moved by a drawing or pulling action only, and in which the diaphragms are carried by a moveable arm or spindle, so centered that the flexible materials which connect the valves with the sides of the

" meters may with certainty be spread to their full extent in order
 " that the gas consumed may be measured with greater accuracy
 " than heretofore."

[Printed, 3d.]

A.D. 1857, July 16.—N° 1973.

WRIGHT, JAMES.—“Improvements in the manufacture of gas.”

These consist, first, in inserting an “inner door to each retort, so as to form a partition between the actual mouth of the retort and the mouthpiece from which the ascension pipe branches, that is to say, the said door or partition must always be placed so as to separate the mouth of the ascension pipe from all communication with the interior of the retort.” An aperture is formed in the upper part of this door, which may be prolonged inwards for some distance, or a tube open at both ends may be inserted in the aperture. This tube is to be filled with “iron wire,” “any open or porous non-destructible body,” a series of small tubes open at both ends, or woven asbestos (in preference) in layers, and as the gas and vapors are making their escape from the retort through this pipe with its heated contents, they become heated and thoroughly decomposed.

Second, consists in introducing “small quantities of the ammoniacal liquor, which has been previously produced, into the retort” while in action by means of a bent pipe.

Third, consists “in improving the action of the hydraulic main by casting or fixing division plates so as to form compartments to separate the mouth of each dip pipe from the other; and also to attach a lid to each compartment in order that easy access may be had.”

Fourth, consists in connecting “an equilibrium reservoir [through which all the gas from the retorts immediately after leaving the condenser is caused to pass] to the throttle valve of the engine used for working the exhauster, so as to regulate more equally the back pressure on the retorts.”

Fifthly, consists in purifying gas from “carbonic acid, sulphur, and sulphur compounds,” by passing it “through sawdust,” saturated with a mixture produced by adding in excess a solution of “carbonate of potash” to “sulphate of iron.”

[Printed, 4d.]

A.D. 1857, July 31.—N° 2085.

GALY-CAZALAT, ANTOINE, and HUILLARD, ADOLPHE.—
“ An Improved apparatus for and mode of manufacturing sul-
“ phuret of carbon, animal charcoal, and carbonic acid ”

This apparatus may consist of an iron case capable of being closed tight, lined with fire-brick, and divided into two compartments by grates or bars made of fire-clay, called the “ caloriphore.” The lower compartment is the fireplace, and contains the coke to be burned; the upper compartment is called the oven, and is heated by the coke-fire in the lower compartment. In order to produce “ sulphuret of carbon,” the fire is continued till the whole has become red-hot, the chimney and other openings are then closed, and a stream of melted sulphur is admitted, which becoming volatalized percolates freely down through the ignited coke and there forming sulphuret of carbon, escapes by an exit pipe to the condenser which contains water.

If the product required be “ animal charcoal,” then “ bones ” are introduced by suitable means into the hot oven instead of sulphur; or if “ carbonic acid ” be the required product, then “ lumps ” or loaves of carbonate of lime ” are introduced instead of the bones.

[Printed, 6d.]

A.D. 1857, August 1.—N° 2101.

PETTIT, GEORGE BROOKS, and SMITH, HENRY FLY.—“ An improved cap or cover for the glasses of gas and other lights.”

This cap is intended “ to be placed over or upon the chimneys or globes of gas and other lights to prevent the smoke therefrom blackening the ceiling, or anything which may be over them, and consists in the combination of a metal or other suitable frame fitted over or upon or formed in a piece with the glass chimney or globe with [a plate or plates of] mica or talc. The mica or talc may be in the form of a flat disc, or of a cone, or of any desired shape, into which the mica or talc can be formed by taking care to allow sufficient space between the surface of the talc and the upper edge of the chimney or globe. We provide for the passing off of the products of combustion which are in effect divided into numerous currents and driven out all round the edges of the mica or talc cover.”

[Printed, 6d.]

A.D. 1857, August 15.—N° 2170.

CLIFT, SAMUEL.—“ Improvements in the purification of certain gases, and in the application of their products to the manufacture of alum.”

These “improvements consist in the application of sulphate of alumina, either in the crude or pure state, for purifying such gases as contains ammonia, and afterwards in the manufacture of alum from the products so obtained.” “Take sulphate of alumina as it is to be met with in the market, and known under the various names of aluminous cake, cake alum, and sulphate of alumina, &c., and break or crush it into small pieces, say, about the size of peas, and place it in the purifiers as used at the gas works, [or it may be applied to any gases containing ammonia] where it absorbs ammonia and other impurities; and when it has become charged with ammonia and other impurities of the gas, remove it and fill the purifier again with a quantity of fresh sulphate of alumina. Then take what has been removed from the purifier, and test it to ascertain the per-cent-age of ammonia which it has absorbed, and if it has not absorbed sufficient ammonia to convert the whole of the sulphate of alumina into alum, dissolve out its soluble parts in hot water, and put it in vats to settle, and when settled, draw off the clear liquor and set it aside. When alum crystallizes out of it in the proportion to the ammonia that has been taken up by the sulphate of alumina from the gas and the uncrystallizable liquor, boil down till it becomes a cake or sulphate of alumina, and use it over again in the gas purifier; but when the sulphate of alumina taken away from the gas purifier contains more ammonia than is necessary to convert it into alum, add sufficient sulphuric acid to it to saturate that excess of ammonia, and sufficient sulphate of alumina to form crystallized alum, and then dissolve out all its soluble parts in water, and set it aside to crystallize.”

[Printed, 3d.]

A.D. 1857, September 2.—N° 2302.

NEWTON, ALFRED VINCENT.—(A communication.)—(Provisional Protection only.)—“ Improvements in meters for gas and other fluids.”

These consist, first, in “a system of ports and valves which operate upon the principle that a definite quantity of any fluid,

" under a certain pressure, will pass through an orifice or passage
 " of certain form and dimensions within a given time, the measure-
 " ment by the motion of an engine of the quantity passing
 " through one port in direct communication with the engine
 " serving as an index to the aggregate quantity passing through
 " the whole system of ports."

Second, relates to an engine for giving motion to the indicating apparatus, and consists of dilating chambers contained in a cylindrical box.

Thirdly, consists in "bevelling the edges of the valve seats, by
 " which means the valves are prevented from adhering to their
 " seats by reason of deposits of impurities thereon."

[Printed, 3d.]

A.D. 1857, September 9.—N° 2350.

LAVENDER, EDWARD.—"An improvement in distilling products from coal."

" This invention has for its object an improvement in distilling products from coal, and consists in subjecting coal to the action of superheated steam [heated by ordinary well known means] in a suitable chamber or vessel, and thus to cause products to be distilled over which are to be condensed. For this purpose the chamber or vessel may be of cast iron or other suitable material, and it is preferred that the highly heated steam should be introduced under a perforated false bottom on which the coals are placed, and the vessel or chamber should also be provided with an opening and door or cover to facilitate the feeding in the coal and removing the coke; also an opening or passage with suitable pipe to a condenser to convey off and condense the products distilled over, and in some cases the products are conducted into acidulated water." "The chamber or vessel, is not to be externally heated, and it is desirable that the chamber or vessel, when of cast iron, should be coated externally with non-conducting materials."

[Printed, 3d.]

A.D. 1857, September 10.—N° 2356.

MILLE, MARIN JOSEPH ALPHONSE, and CANAL, FRANÇOIS.
 —(Provisional Protection only.)—"Improvements in producing gas."

This "invention consists in the use of tar and other residues arising from the manufacture of gas and other tars, resinous or fatty matters mixed with thin shavings or chips or pieces of wood, and sawdust of all kinds of wood. This mixture is distilled in ordinary gas apparatus, and the gas resulting purified by ordinary means; by this process a very pure and cheap gas is obtained of good lighting power."

[Printed, 3d.]

A.D. 1857, September 15.—N° 2390.

GRAHAME, THOMAS.—"Improvements in grinding corn, and in generating gas on inland waters."

"This invention has for its object improvements in grinding corn and in generating gas on inland waters, and consists in combining in a suitable vessel (proper for navigating on the inland waters on which it is to be used) a steam engine and gearing for moving or propelling the vessel and a flour mill to receive motion from the steam engine when the vessel is at anchor or fixed to the shore. The furnace or furnaces on board such vessel are to be arranged not only suitable for heating the boiler for the purpose of generating steam, but also to heat retorts to generate gas. By such a combination of mechanism on board a boat, the greatest economy will result in receiving corn to be ground in the best localities, and in delivering the flour and bran on the various parts of the banks of the inland waters. And in respect to supplying towns and places situated on inland waters with gas, it will only be necessary to have gasometers on shore in suitable places, and to anchor or fix the vessels for a time near a gasometer, in order to supply the same with gas as it is generated on board the vessel, the necessary purifiers, as well as the retorts, being on board the vessel."

[Printed, 3d.]

A.D. 1857, September 16.—N° 2403.

MIDDLETON, WILLIAM, jun., and CHELLINGWORTH, THOMAS TERTIUS.—"Improvements in adjusting the sliding parts of chandeliers and gas pendants."

These consist, first, in superseding the use of balance weights for regulating the raising and lowering of chandeliers by the use of springs coiled up in boxes. As the chandelier slide is being

pulled down the springs are at the same time wound up, and as the winding up of such springs absorbs an equivalent power to the weight of the chandelier slide or pendant (to which the springs may be attached) it will remain in any position in which it may be placed, and yet may be raised or lowered by the slightest amount of pressure. The regulating properties of the "fusee" are dispensed with, and buffers or friction rollers substituted for them, which may be tightened by a thumb screw down on the peripheries of the spring boxes.

Second, the inner and outer tubes of pendants may be made of "twisted tube" and be worked after the manner of a male and female screw, so that the outer part may be raised or lowered by turning it round; an additional strong spring should be caused to act against the surface of the inner tube, so that it will present an equivalent to counteract its voluntary tendency to run down.

Thirdly, a "rack" may be formed on the inner slide, and by securing a spring detent in any suitable way to the water cup, the same object is effected, viz., the sustaining of the slide without the use of weights. By turning the lower part slightly round, the detent will be freed from the notches, and it may then be raised or lowered freely.

[Printed, 10d.]

A.D. 1857, September 19.—N° 2438.

BROOMAN, RICHARD ARCHIBALD.—(A communication from Picard, François.)—(Provisional Protection only.)—"A method of decomposing soapy wash waters used in the washing and scouring of wools and cloths, of separating therefrom fatty matters held therein, and of treating such fatty matters."

"This invention consists in acting upon the wash waters, in which wools and cloths have been washed and scoured, in order to free them from oil and grease, with the residual liquid resulting from the manufacture of eau de javel and chloride of lime." "The supernatant liquor is drawn off and the precipitated fatty matter is collected from the bottom of the vat and allowed to drain. If the mixture is hot, which it may be, then the fatty matter will rise to the surface, and must be skinned off."

"The fatty matter thus obtained will be found suitable for the manufacture of carbonated hydrogen gas; or it is distilled in retorts, and the resulting product from the distillation is a dark

" brown oil, very rich in saponifiable matters, applicable to the manufacture of soap. The residuum remaining in the retorts is a light carbon containing phosphate of lime, which may be used as a disinfectant, and in the preparation of a powerful, energetic, and useful manure."

[Printed, 3d.]

A.D. 1857, September 28.—N° 2489.

BROAD, JAMES.—(Provisional Protection only.)—"The construction of a lamp with two burners and two wicks to produce one flame or two flames according to its regulation, by generation of gas from all and every sort of oils or spirits, naphthas, resinous and tarry substances, and also from petroleum or earth oils."

" The lamp may be an ordinary argand lamp with the addition of an inner tube terminating at the bottom in the supply cistern, and rising thence a little above the argand tube through which it passes. The mode of application of my invention is as follows : I fill the supply cistern of my lamp, place my tubes so as to take up their supplies of oil or spirit, or both, by capillary attraction through wicks so placed as to reach within a short distance of the tops of the tubes, the inner tube having a hollow top (button shaped) perforated round the edge for the emission of gas; the outer tube fashioned like the ordinary argand lamp, but having a metal guard over the top surface. To this surface I raise the wick and light it ; the heat therefrom acting on the tube and button of the inner burner generates a gas, which escapes through the perforations and becomes ignited by the flame of the outer tube with which it combines. But I claim to burn the gases, thus produced, either together or separate in the same lamp, and with or without the button. I use a non-conductor between the bottom of the wick tube and the oil cisterns (which may be divided into compartments if needful) and admit air into the tubes."

[Printed, 3d.]

A.D. 1857, September 29.—N° 2506.

NEWTON, WILLIAM EDWARD.—(A communication.)—" Improved apparatus for igniting gas and other lamps."

The object of this invention is to light gas or other lamps by means of a current of electricity in such a manner that after the

ignition has been produced the conducting wires will be removed from the continued action of the flame; also in letting on and shutting off the gas from the burner by means of electricity.

The end of the gas pipe is closed and perforated with two small holes for the emission of the gas; over the end of this pipe is placed a cap, with a plate or diaphragm within it, perforated with holes to correspond with the holes on the top of the pipe; to the cap is attached a small ratchet wheel, which is actuated by a pawl engaging into it, and as the cap is turned round the holes in the diaphragm are brought into or out of line with those in the top of the pipe, and the gas thereby allowed to flow to the burner or be cut off, as required. Suitable electro-magnets and a battery are employed, the action of which, combined with a spring, causes the armature to move up and down, the motion of which is communicated through the above pawl and ratchet wheel to the cap; the same motion also actuates the two conducting wires, and brings their points over the gas as it flows from the burner, and then ignites it.

[Printed, 7d.]

A.D. 1857, September 29.—N° 2507.

NEWTON, WILLIAM EDWARD.—(A communication from Alfred Nobel.)—“ Improved apparatus for measuring gas.”

The object of this invention may be effected, first, “ by partially or wholly saturating the gas with the vapour of some liquid, such as water or alcohol, naphtha, or some hydrocarbon. Second, by absorbing the vapour of water contained in the gas by means of some hygroscopic substance, such as chloride of calcium, sulphuric acid, or other suitable substance. Third, by the chemical reaction of a portion of the gas upon certain substances, such as chloride, with which illuminating gas combines, and forms a liquid under the name of ‘ Dutch drops.’ ”

The Patentee prefers to adopt the mode first referred to, and the apparatus required may consist “ of a vessel of metal, glass, or any other suitable material, and of any convenient shape. This vessel is partially filled with the liquid with which the gas is to be saturated, and from the upper part of the vessel are suspended a number of strings or threads of some fibrous material, which will, by its capillarity, absorb and draw up a quantity of the liquid, and present an extensive evaporating surface to the action of the gas in its passage through the apparatus. A

" given and ascertained small proportion only of the gas (say one-third part of the entire quantity) need pass through the apparatus, and this only is allowed to obtain access to the interior or absorbing part, while the greater portion of the gas is made to pass round the vessel. The gas in passing through, will absorb and carry off a certain quantity of the liquid, and is by accurately measuring or weighing the quantity that remains in the vessel that the amount of gas that has passed through is ascertained."

" A dial and index may be adapted to the apparatus to indicate the alterations of the level of the liquid in the absorbing vessel, and consequently the whole amount of gas that has passed," may be readily calculated.

An increase or reduction of temperature in the gas flowing through may be compensated for by means of the expansion and contraction of mercury contained in a vessel which more or less contracts the passage for the gas by elevating and depressing the end of a glass rod into the passage as required.

[Printed, 10d.]

A.D. 1857, October 2.—N^o 2529.

WILLWAY, JOHN SWEET.—" An improved apparatus to act as " a gas valve."

This invention consists in introducing into a gas flow-pipe a circular vessel containing mercury, or some elastic substance, such as india-rubber, into which a circular valve is caused to descend, the edge of which entering the mercury or pressing against the elastic material, closes the passage for the gas. This valve is actuated by a rod, which, instead of passing through a stuffing box, passes down a small pipe, the end of which is caused to enter another circular vessel containing mercury, situated on the top or back of the valve, by which means the friction of a stuffing box is avoided, while no gas can pass round the bottom edge of the pipe as it is kept immersed in the mercury.

[Printed, 5d.]

A.D. 1857, October 6.—N^o 2557.

HUGHES, RICHARD HUGH.—" Improvements in hydraulic connections of gas chandeliers, lanterns, or pendants."

These consist, first, in attaching to "the fixed tube off the hydraulic pendant" a "rim," and "to the outer tube of the

"moveable part" another "rim." These rims may be ground conical or otherwise, or leather or other suitable packing may be applied to both, so that when they come together by reason of the breaking of the chains, or other bands supporting the counterbalance weights, the gas will be prevented from escaping.

Second, consists in constructing the weights, which form the counterbalance "of the form of rings, or with rings attached to them to embrace loosely the central or hydraulic stems, yet so as to be readily taken over the same, and the ornaments thereon, as required."

[Printed, 9d.]

A.D. 1857, October 6.—Nº 2564.

KNAPTON, WILLIAM.—"Improvements in gasometers or gas holders, and in the application thereof to railway and other carriages and ships, for lighting the same with gas."

These relate to the construction of gasometers by combining a flexible or elastic material, such as vulcanized india-rubber, canvas, or any other suitable elastic material," with more rigid materials, whereby the usual tank may be dispensed with; and consists in forming the upper part or cover, the bottom, and a portion of the sides of the gasometer, rigid with plates of metal or gutta-percha, and connecting these rigid parts together in an air-tight manner by pieces of elastic material of about the same depth as the aforesaid rigid parts, so that when the gasometer is empty the rigid parts will fall and cover one over the other. Such a gasometer supported by counterbalance weights may be adapted to the roof or under the seats of a railway carriage, placed under the seat of an omnibus, or on shipboard, &c.

[Printed, 1s. 2d.]

A.D. 1857, October 8.—Nº 2584.

WADSWORTH, JAMES.—(Provisional Protection only.)—
"Improvements in the production and management of artificial light and heat, and in certain parts of apparatus applicable thereto."

This invention consists, firstly, as applied to gas "in deflecting and subdividing the jet or current of gas issuing from a burner by the interposition of some body, such as a suitably shaped

" piece of metal or wire, whereby the stream of gas is partially dispersed and more widely distributed so as to bring it into contact with the adjacent air at more numerous points, in order to its more perfect combustion."

Secondly, as applied to the vapour of naptha, or any of the bodies known as hydrocarbons, " in deflecting and dispersing the vapour as it issues from the chamber or pipe in which the vaporization is effected by interposing a piece of wire, needle, or some similar object, and also in regulating the admixture of air with the vapour by making the air passages capable of being enlarged or contracted as occasion may require."

[Printed, 3d.]

A.D. 1857, October 19.—N° 2673.

COCKEY, EDWARD, COCKEY, HENRY, and COCKEY, FRANCIS CHRISTOPHER.—" Improvements in regulating the flow of fluids."

This invention relates to a peculiar construction and arrangement of valves for directing the passage of gas to and from the various vessels employed in its manufacture.

This valve may consist of "two cylindrical boxes or cases, the faces of which are accurately ground so as to fit gas-tight over each other. The lower box is subdivided into a number of cells or chambers by means of radiating divisions cast therein, and each chamber is furnished with an outlet or inlet pipe, which communicates with the purifier or other apparatus employed in gas making. A small drain pipe is also fitted into the bottom of each chamber, for the purpose of drawing off the tar or other deposits therefrom." "The upper box is also constructed with a number of cells or chambers, but of a size large enough to cover or embrace any two contiguous cells in the lower box on which it rests, and turns perfectly gas-tight." By simply turning the upper box in one direction or the other a change in the direction of the flow of gas will be effected.

[Printed, 10d.]

A.D. 1857, October 22.—N° 2693.

CHIANDI, ALEXANDRE HENRI CHARLES.—" Improvements in the manufacture and combustion of certain products of peat, and in the apparatus employed therein."

These consist, first, in forming an "improved fuel" by immersing peat coke" while hot into "thick peat tar," from which the "oils" have been separated by a previous distillation, and then, after it has drained for a day, subjecting it to "carbonization at a "high temperature" in a closed retort. The retort preferred is provided with an horizontal passage along the top, and the "head" of the retort is provided with two pipes for the passage of the gas.

Secondly, consists in distilling the "light oils," &c. from "peat tar" by means of an apparatus heated by high-pressure steam.

Thirdly, relates to a "burner" calculated to burn "peat-gas, " though naturally poor, in hydro-carburets." A suitable form for this object is a burner with a circular orifice or slit; the truncated cone which conducts the air to the flame is spread out into a bell-mouth shape at top to check the force of the air against it, and allow it only to rise vertically and excentrically; and the cup below the burner is perforated or slotted at the lower part instead of through its entire depth, the dimensions of the openings varying according to the gauge of the burner."

[Printed, 7d.]

A.D. 1857, November 2.—N° 2782.

ISOARD, MATHIEU FRANÇOIS.—"Improvements in producing heat and light."

This invention consists in "carburetting superheated steam, effected by causing the superheated steam to traverse hydro-carburets of any kind; this carburetting furnishing, according to the mode of operating and the carburets employed, gas for lighting or for heating purposes."

"I cause steam to be superheated, and to traverse in a carburetting apparatus, in which it is charged with gaseous hydro-carbon, which it carries away. On leaving this apparatus it is passed under the bars of a furnace, in which it serves as fuel. The vapour of hydro-carburet burns, and the steam arising from water also burns after having been decomposed into hydrogen and oxygen."

"Instead of conducting it under a fire-grate, it may be conducted into a gas holder, whence it can be allowed to escape at pleasure, and burnt like gas used for lighting purposes."

"I vary the preparation of the hydro-carburets to be used ac-

" cording to the purpose required. For steam intended to serve
" as fuel, I use heavy tars of all kinds, and for gas for lighting
" purposes I use hydro-carburets."

[Printed, 5d.]

A.D. 1857, November 4.—Nº 2797.

LAMING, RICHARD.—(Provisional Protection only.)—"Improvements in purifying gas and in apparatus useful for that purpose."

" This invention relates to the double diaphragms scrubber or
" washing vessel, described in the specification of my patent,
" dated February 3, 1857, and improves upon it by substituting
" for the small holes for minutely dividing the gas in the washing
" liquid, other arrangements for establishing a perfected system of
" wave or surface washing (sometimes to be combined with ordi-
" nary scrubbing or washing), the object of the invention being
" not only to purify or wash the gas with a minimum quantity of
" the liquid used, while no greater resistance is in any case opposed
" to the free passage of the gas than may suit the circumstances
" of the particular works, but also to reduce the current of im-
" pure gas to a thin stratum, it being at the same time brought
" into contact with a flowing stream of purifying liquid, which
" also occupies great area, but is nevertheless so confined within
" channels as to be less liable to stagnate in its course than in the
" case of the former double-diaphragms' scrubber."

[Printed, 3d.]

A.D. 1857, November 10.—Nº 2836.

DEVON, WILLIAM.—"An improved self-acting apparatus for
" flushing water-closets, and the means of connecting the same to
" water mains, parts of which are applicable to the junction of
" gas or water pipes generally."

This invention relates, first, to two modes of flushing water-closets, &c., with water, for which see Abridgments on that subject.

Second, to "an improved screw ferule" for joining water or gas pipes to the "main," consisting of a "nut," with a screw cut on the outside and another on the inside, one being a right-hand screw and the other a left-hand screw. On bringing the end of the branch pipe and nut up to the main ready tapped and turning the nut its inner screw engages the screw on the end of the branch pipe, while at the same time the outer screw takes into the tapped main, and the whole is brought tightly together.

Third, relates to "an union joint for pipes, made without the use of solder," and consists in slipping over the ends of the pipes a metal half joint, with a screw cut thereon; also a collar of brass or other metal; and also a nut of metal working on such collar. The ends of the pipes are then bevelled, and a ring of brass also bevelled to coincide is introduced, and the nut is then screwed up tight.

[Printed, 10d.]

A.D. 1857, November 17.—N° 2885.

BROOMAN, RICHARD ARCHIBALD.—(A communication.)—
" Improvements in gas burners."

This invention consists in "surrounding the central ring of orifices for the escape of gas [in an argand burner] by an additional ring of lesser orifices, which are placed equi-distant from the central ones, as well as from each other, and about six of these will be found to answer a good purpose."

"The inventor has discovered that by this arrangement the smaller flames obtained in burning the gas produce upon the central and greater ones the remarkable effect of obviating all flickering and smoking, so that the argand may be burned at its maximum height without the use of a chimney."

[Printed, 5d.]

A.D. 1857, December 1.—N° 2985.

LANE, DENNY.—"Improvements in lighting, regulating, and extinguishing street and other gas lamps by means of electricity."

These consist, first, in the use of "a portable battery," to be carried from lamp to lamp for the purpose of lighting them, by means of which the lamplighter, after turning on the gas by a tap placed near the ground, "applies the two poles of his battery to the contact points of the circuit conductor, through which the electricity passes and ignites the gas." The gas may be lighted by passing a spark through it, or by the intense heating of a thin platinum wire. The battery may in preference be Ruhmkorff or Hearder's arrangement.

Second, relates to "turning on the gas, regulating or extinguishing the lights of street or other lamps;" and consists in

" giving motion to the taps by means of a train of wheels and a spring or other maintaining power." This may be effected by an electro-magnet with an armature opposed thereto; the armature forms also a detent in gear with the wheel train, which it retains or holds so long as no current passes through the coils of the electro-magnet. When the electric current passes through the electro-magnet is thereby excited, and attracts the armature, which causes the detent to release a tooth of the wheel train," and turn the tap as required.

[Printed, 4d.]

A.D. 1857, December 1.—N° 2986.

THOMPSON, THOMAS JEFFERSON.—" Improvements in apparatus for lighting railway trains with gas."

This invention relates to the use of compressed gas for lighting railway carriages, and consists, first, in filling a portable vessel with gas at a high pressure by means of pumps from stationary gas holders. The portable vessel is provided with a safety valve, which is held close by a coiled spring, but which will open under excessive pressure of gas and allow the excess to blow away through a ball cock provided with a whistle. Suspended from this valve, and actuated by it, is another valve for regulating the supply to the burners. Within the vessel is placed a cylinder, and within the cylinder is placed an elastic and expansible valve resembling a bag, which is attached to a powerful spring which draws the valve into a collapsed state as the gas vessel becomes empty of gas. On filling the gas vessel the valve is also filled, and on emptying it the spring draws down the elastic part, and thereby assists in keeping more uniform the pressure in the gas vessel. The couplings required are attached to each carriage, and are made sufficiently elastic, and provided with suitable springs.

Second, each carriage is provided with an elastic bag, conveniently placed, capable of containing sufficient gas to supply the lights for 10 or 15 minutes, while it may be temporarily detached from the train.

[Printed, 1s. 1d.]

A.D. 1857, December 17.—N° 3095.

TURNER, MONTAGUE JOHN, and TURNER, MARCUS WILLIAM.—" The improvement of conduit pipes and tubes for sewers, drains, conduits, gas, and other purposes."

This "invention consists in the manufacturing of glass formed into conduit tubes or pipes, and drains for the conveyance of water and gas, and for other purposes." The formation of the gas pipes, &c. will be accomplished by the making and casting of hard block glass into moulds of the required size, and in various lengths to suit the purpose for which it may be required, lipped and grooved at either end in the manner of screw to prevent leakage or escape, with or without cement. The pans and tanks will be simple casting."

[Printed, 3d.]

A.D. 1857, December 19.—N^o 3124.

BOUGH, WILLIAM.—(Provisional Protection only)—"Improvements in lamps and wicks for burning rosin and other oils and fluids, parts of which improvements are applicable to argand gas burners."

This invention is a repetition of that for which provisional protection was granted to William Bough, A.D. 1857, June 25, N^o 1790, with the following additions, viz., "in constructing and applying wicks to lamps which burn rosin oil, I employ strong felted woollen cloth in place of the cotton and other wicks now employed."

[Printed, 3d.]

A.D. 1857, December 21.—N^o 3136.

BASFORD, WILLIAM.—"Improvements in the manufacture of gas, and in retorts and other apparatus to be used therein"

These improvements consist, first, "in making a long vessel of a flat oval shape divided lengthwise in the centre by a vertical partition, which forms the vessel into two separate chambers communicating with each other at the back, the partition being kept short for that purpose. These chambers, having the appearance of two retorts joined into one, is called a twin retort, and may be made of cast or wrought iron or fire-clay." Each of these compartments is provided with an exit pipe opening into a receiver. These pipes may be closed at pleasure. In working this double retort the compartments are charged alternately, and the valves on the exit pipes are so worked that the flow of gas is caused to proceed from the compartment most recently charged through that which is nearly exhausted, and on to the receiver." The "receiver" is a conical shaped vessel placed over the retorts, through which the gas is caused to proceed on its

way to the Patentee's "apparatus for purifying coal gas" (See Specification N° 1099, dated May 9, 1856.) From thence the gas is caused to proceed to "the hydraulic chest or vessel," consisting of a closed iron vessel divided horizontally by a partition, on which are laid perforated plates, and on the plates a layer of charcoal and lime. The inlet pipe conducts the gas underneath the partition into water or lime water, and the gas percolating upwards through the lime and charcoal becomes purified, and is then caused to proceed by the exit pipe to the gasholder.

[Printed, 10d.]

A.D. 1857, December 28.—N° 3173.

WADSWORTH, JAMES.—"Improvements in the production and management of artificial light, and in apparatus applicable thereto."

These improvements relate, first, to the "throttling or wire drawing" of gas, by causing it in "its progress to or towards the burner to pass through an orifice or opening [or openings] smaller than the orifice of the burner," whereby the illuminating power of the flame of such gas will be increased.

The throttling or wire drawing of gas, and its "consequent reduction in pressure and expansion in volume" may be effected in a variety of ways. "Any sufficient contraction of the canal or passage between the meter and the burner will produce the desired effect in a greater or less degree." For example, a plug with an orifice less than that of the burner may be inserted in the pipe at any convenient point; or a "cock or tap, the plug of which is solid or unpierced with the exception of a (small) hole or opening therein for the passage of the gas;" or the gas may be caused "to pass through a tube or pipe of small bore."

Second, consists in causing the gas to pass through a small chamber immediately previous to its issuing from the burner, which chamber is heated by the heat of the burner. Deflectors are introduced to cause the gas to impinge against the hot sides of the chamber.

[Printed, 11d.]

A.D. 1857, December 29.—N° 3178.

SPENCER, THOMAS.—"Improvements in the purification of illuminating gas."

These improvements consist, first, in the application for the above purpose of "the iron ore, known to mineralogists as the 'spathose ore,'" and to "chemists as a carbonate of the protoxide of iron," which substance may be used in an ordinary purifying apparatus, "in lumps or in a granular state, and while "moist."

Secondly, in the application of the "black magnetic substance" "which results from the calcination of the 'spathose' ore."

Thirdly, in the application of "any ore or substance containing feruginous matter in a magnetic state, or any substance not naturally so, but which by treatment may be reduced to this state, such as magnetic ores and ferruginous sands, and also a magnetic substance obtained by calcining the well-known hematite or peroxide ores along with carbonaceous matter." When such ferruginous substances become impure the sulphur may be distilled off, and the ore thus revived may be used over and over again.

[Printed, 4d.]

1858.

A.D. 1858, January 7.—N° 23.

LAVATER, MANUEL LEOPOLD JONAS.—"The application of the principle of exhausting air, as used in plate holders, breast pumps, for pegs."

This invention consists in "the application of the principle of pneumatics," to cause "pegs," "brackets," "fixtures," "forges," "reflectors," &c., and generally to all articles or goods that are required to be supported, or to adhere mechanically to solid surfaces, such as glass, walls, pannels, &c.

A suitable vacuum for the above purpose may be obtained by means of india-rubber bottles or balls, pumps, &c., but the patentee prefers the following mode:—"On the edge of a wooden cup is fixed an india-rubber disk (as used in plate holders), and on the top of the said cup is placed a rotary cylinder, the inside of which is a female screw or knot.

"The cylinder and cup are traversed through the centre by a square stem, the end of which is a screw working in the knot of the cylinder; to the other end of the stem is attached a flat button, which is fastened to the disk.

" The method of using the above-named pneumatic utensils are
 " as follows :—The disk should be placed on any solid surface,
 " when, by turning the cylinder, it acts on the stem which draws
 " the india-rubber disk and creates a vacuum, greater or less,
 " according to the modulation of the screw, which, when done, the
 " utensil will remain secure. For disadhering the said utensil,
 " unscrew the cylinder till the disk is forced flat."

[Printed, 8d.]

By Disclaimer, filed 11th December, 1858, (N° 23.*) the Patentee alters the title of his invention to as follows :—" The application " of the principle of exhausting air for fixing pegs to solid " surfaces." Various applications of the principle are also dis-claimed, but they are unconnected with gas apparatus.

A.D. 1858, January 7.—N° 24.

KIDD, JOSHUA.—(Provisional Protection only.)—" Improved " apparatus for regulating the pressure and supply of steam, gas, " or other rarified or compressed bodies, and for causing more " perfect combustion of the gases procured from coal, and in- " creasing the heating and illuminating power of the said " gases."

This invention consists, first, in "the application of a valve " with a disc or pressure surface, made to move or slide through " a socket in a box or case [of any convenient shape], and " balanced on the pressure for regulating the pressure and supply " of steam, and every application of such valve for such purposes. " Secondly, in the application of a disc and valve balanced on the " pressure of gas in combination with a reservoir or receptacle " containing spirits of turpentine, coal naptha, or other volatile " bodies, for the purpose of regulating the pressure and increasing " the brilliancy of coal gas, and for impregnating air with the " vapours emitted from volatile spirits, together with the general " arrangement and combination of parts."

The gas is caused to pass through volatile spirits contained in circular chambers on the bottom of the "box or case," and to escape to the pipes through a valve, the opening of which is regulated by the elevation or depression of a disc to which it is attached.

[Printed, 5d.]

A.D. 1858, January 16.—N° 70.

MENNONS, MARC ANTOINE FRANCOIS.—“Improvements in
“gas retorts.”—(A communication.)

This invention consists in an improved construction of retort for the manufacture of gas, which may be applied to domestic purposes. The retort is placed in a vertical position with the fire or furnace applied to the side of it in a casing which surrounds the retort. The upper and lower ends of the retort are closed by hydraulic vessels forming water lutes. The lower hydraulic vessel may be replaced by an iron bottom cast with the retort. The retort may be elevated and depressed by a rack and pawl, whereby different portions of the retort will be exposed to the greatest heat. A suitable pipe is provided for carrying off the gas to the purifiers, and an opening to allow of the escape of any excess of gas.

[Printed, 6d.]

A.D. 1858, January 22.—N° 116.

RAINE, WILLIAM MATTHEW.—(Provisional Protection only.)—
“Purifying and increasing the illuminating power of gas.”

For this purpose is employed “a vessel containing chambers, through which the gas is made to pass, and in so doing the gas is brought into contact with a large surface of liquid called benzol or mineral naptha, to the action of which liquid the gas will be subject; the said vessel and chambers to be divided into different compartments, the upper compartment to constitute a cistern or reservoir for supplying the lower compartment.”

[Printed, 3d.]

A.D. 1858, January 29.—N° 164.

BROOMAN, RICHARD ARCHIBALD.—(A communication from E. A. Chameroy, Junr.)—“Improvements in apparatus for measuring water, gas, and other fluids.”

By this invention the flow of water, gas, &c., is indicated by the motion of a pendulum. The water, &c., is caused to flow into a circular compartment placed within an outer casing. The inner compartment is open at the bottom, and dips into mercury. The water flows round the bottom edges of this compartment and escapes by an aperture in the side of the casing. On the surface of the mercury is a float, which is elevated or depressed by the flow of the water acting upon the surface of the mercury. To the

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A.D. 1858, February 1.—Nº 184.

OMAN, RICHARD ARCHIBALD.—(A communication.)—“Improvements in burners for generating and burning gas from hydrocarbon fluids.”

The body of the burner consists of a straight tube, having its upper end flattened and arched over, and otherwise shaped to form a deep slot, through which the gas and air are to issue and be consumed in a flat flame similar to that known as the “Pigeon’s wing,” but of larger dimensions, to admit of a large flow of vapour and air. The bottom of the tube may be closed, or the size of the aperture regulated by a screw conical plug or valve. Through this regulated opening the hydrocarbon, contained in a separate reservoir placed at a suitable elevation, or the vapour, issues and proceeds up to the burner: and in the sides of the tube are two openings to admit the required supply of air for combustion. The passage in the tube is closed or otherwise regulated by a screw plug or stop. Attached to the top of the tube and in close proximity to the burner are two bent or looped metal wires, the ends of which are returned and enter the tube. These bent wires are heated by the flame, and the heat thereby received is conducted along the wires down to the tube, and heats it sufficiently to cause the hydrocarbon to volatilize. The air and vapour thus heated pass up the tube together and escape for combustion by the burner.

[Printed, 8d.]

A.D. 1858, February 2.—Nº 187.

HOLMES, WILLIAM CARTWRIGHT, and HOLLINSHEAD, WILLIAM.—“ Improvements in the manufacture of gas, and in the apparatus employed therein.”

This invention relates to “further improvements in the mode or method of manufacturing or producing gas, as patented by the said William Cartwright Holmes, dated 20th June, A.D. 1855,” and consists in “conducting the vapours or gases thus produced or obtained from the retort or vessel to another vessel or receiver, where they are still further subjected to the action of superheated steam, so that the temperature of such vapours or gases being raised, the formation of tar is prevented, and a greater amount of illuminating gas is obtained thereby.” The superheated steam may be introduced to the separate receiver, as

float is attached suitable rods and levers which are connected with a cross head. This cross head, by rising or falling, acts on the rod of a pendulum, and raises or lowers its centre of oscillation. The pendulum is actuated by suitable clockwork, to which an index is attached. "The relation existing between the outflow of the fluid "and the movements of the pendulum will at once be seen, and "from this the volume of fluid delivered may readily be calculated."

[Printed, 5d.]

A.D. 1858, January 29.—N° 168.

HERBERT, WILLIAM HART.—"Improvements in regulating
"the pressure of gas."

"This regulator consists of a chamber of a diameter or capacity according to the number of lights to be supplied. In practice it is preferred to use one of these regulators for each light, and introduce it immediately below each burner. Fill this capacity with a fibrous material, so that the gas in its passage must pass through amongst the fibres.

"In preparing this permeable fibrous body, take layers of felt or other fibrous material, and make up a sufficient thickness according to the initial pressure of gas, the fibres being disposed transversely to the passage of the gas, and held together by perforated or other porous plates by means of suitable connexions; between these porous plates cause the fibres to be compressed more or less according to the density of the body required, which will also be according to the initial pressure of the gas. The fibrous material being held somewhat loosely together, the pressure of the gas produces this effect:—The greater the initial pressure becomes, the more the fibres are compressed together, rendering it more difficult for the gas to permeate; thus by the self-action of the gas on the regulator, the exit pressure is regulated and rendered uniform. In order to intercept the grosser impurities of the gas before passing through the regulator, place a little loose wool between the ingress passage and the body of fibrous material before mentioned, which latter also has a similar effect in filtering and purifying the gas."

[Printed, 5d.]

A.D. 1858, February 1.—N^o 184.

BROOMAN, RICHARD ARCHIBALD.—(A communication.)—
“ Improvements in burners for generating and burning gas from
“ hydrocarbon fluids.”

“ The body of the burner consists of a straight tube, having
“ its upper end flattened and arched over, and otherwise shaped
“ to form a deep slot, through which the gas and air are to issue
“ and be consumed in a flat flame similar to that known as the
“ bat’s wing,” but of larger dimensions, to admit of a large flow
of vapour and air. The bottom of the tube may be closed, or the
size of the aperture regulated by a screw conical plug or valve.
Through this regulated opening the hydrocarbon, contained in a
separate reservoir placed at a suitable elevation, or the vapour,
enters and proceeds up to the burner: and in the sides of the tube
are two openings to admit the required supply of air for combus-
tion. The passage in the tube is closed or otherwise regulated by
a screw plug or stop. Attached to the top of the tube and in close
proximity to the burner are two bent or looped metal wires, the ends
of which are returned and enter the tube. These bent wires are
acted on by the flame, and the heat thereby received is conducted
by the wires down to the tube, and heats it sufficiently to
cause the hydrocarbon to volatilize. The air and vapour thus
heated pass up the tube together and escape for combustion by the
burner.

[Printed, &c.]

A.D. 1858, February 2.—N^o 187.

HOLMES, WILLIAM CARTWRIGHT, and HOLLINSHEAD.
WILLIAM.—“ Improvements in the manufacture of gas, and in
“ apparatus employed therein.”

This invention relates to “ further improvements in the mode
“ or method of manufacturing or producing gas, as patented by
“ the said William Cartwright Holmes, dated 20th June, A.D.
“ 1855,” and consists in “ conducting the vapours or gases thus
“ produced or obtained from the retort or vessel to another vessel
“ or receiver, where they are still further subjected to the action of
“ superheated steam, so that the temperature of such vapours
“ or gases being raised, the formation of tar is prevented, and a
“ greater amount of illuminating gas is obtained thereby.” The
superheated steam may be introduced to the separate receiver, as

also to the retort itself, through holes or perforations, so that it may the better commingle with the gas.

[Printed, 8d.]

A.D. 1858, February 5.—Nº 218.

WILLIAMSON, SAMUEL.—“ Improvements in the construction and mode of affixing street and other gas lamps or lanterns.”

By this invention, first, “ the lamp, whether square, hexagonal, or octagonal, is made portable, and capable of transport, in three detached parts, viz., the head, the canopy, and the under frame or body, by which means a great number of gas lamps, when packed, may be compressed into a small space, and yet firmly and substantially put together, each in a few minutes.”

Second, “ the head is fastened to the canopy by such number of prongs as the shape may require, which are passed into corresponding slots in the angles of the top of the canopy, in which also a large hole is cut for ventilation; the prongs being bent towards each other, constitute firm fastening cramps. The canopy is fastened to the under frame or body by iron pins which are passed into strong tin sockets firmly soldered on in suitable relation to each other on the canopy and body, the pins being of a wedge form, and approaching in opposite directions, wedge each other, and hold both parts firmly together.”

Third, “ each standard and angle bar, with its respective bead, is formed and constituted of one piece only, the bead being formed by a pair of rollers for that purpose, and worked in a beading machine, thus differing from the ordinary bars in street gas lamps, which are made of two pieces. The door of the lamp, with its frame, bead, and rabbet, which holds the glass, is formed and made of four pieces, whereas the doors of ordinary gas lamps are made of twelve pieces.”

The lamps are attached to posts and pillars, by “ tinned iron bolts and nuts, the nuts being soldered into each angle of the bottom, and the bolt having a metal or lead ball cast on or soldered to the head; the bottom of the lamp is placed on the head or top plate of the posts, and the bolts passed through the head and screwed into the nuts, giving perfect security to the lamp, while the balls and nuts being tinned, are preserved from rust, which enables the lamp to be readily disengaged from the post when necessary.”

" In case the lamps are to be glazed without the use of putty, I solder two grooves opposite to each other to the outside of each standard and angle bar of the canopy and body, into which the glass is placed with additional fastenings. It is secured on the canopy by one cramp fixed on the upper bar, and by three moveable or fixed cramps on the under bar or broad rim, which are doubled over on the glass, and it is secured on the body by three (more or less) moveable cramps passing through slots cut in the upper rim, which are doubled over on the glass, and two (more or less) fixed cramps, which are soldered to the outside of the lower rim."

" The glass is placed and fastened to the door inside by two grooves at opposite sides, and one groove at the bottom, and by three moveable cramps run through slots in the upper bar."

" The glass is fastened in the bottom of the lamp by four moveable T tie cramps passed through slots cut at the end of each cross bar, and passing through the bottom rim also are pressed down on the corner of each piece of glass."

[Printed, 10d.]

A.D. 1858, February 17.—Nº 299.

MONSON, CHARLES.—"A new and useful mechanism or apparatus to be used for supporting one or more gas burners, and conducting gas to such or for various other useful purposes."

This invention consists in the "use of a system of levers jointed together, and known by the common appellation of 'Jacob's ladder' or 'lazy-tongs.'" In combination with these are conducted jointed pipes or flexible tubes for the purpose of conveying the gas to the burners. The apparatus can be extended or contracted as required.

[Printed, 6d.]

A.D. 1858, February 23.—Nº 348.

PULS, FRANCIS.—"The manufacture of certain hydrocarbons."

This invention consists in "the use of earthy, alkaline, and metallic oxides, sub-oxides, per-oxides, sesqui-oxides, their carbonates, hydrates or mixtures thereof (either any or all of the said substances) with gas pitch in pieces or powdered, for the purpose of obtaining by distillation a mixture of solid and fluid

“ hydrocarbons by heating the same together in a retort or other suitable vessel. The above-mentioned substances so mixed with the gas pitch may be recovered after distillation, and used over and over again.”

[Printed, 3d.]

A.D. 1858, February 27.—N° 394.

GILBEE, WILLIAM ARMAND.—(A communication.)—“ An improved union joint for gas, water, and steam pipes, also applicable to the branch pipes of fire-engines.”

“ This invention consists in constructing the upper pipe of union joints with and applying thereto a grooved flange, and a pressure collar formed with a grooved wedge flange, and in forming the lower pipe of the joint with lugs, and with a suitable elastic seat or bearing, so that when the flanges are placed under the projecting lugs in the lower pipe of the joint, by giving a partial turn to the nut of the collar, an air or water-tight junction is obtained.”

“ This improved joint may be advantageously employed in marine pumps or engines, in which the ordinary screw joint becomes deteriorated by the action of sea-water; also for the hose and branch pipes of fire-engines and garden pumps, and for water, steam, gas pipes, and pipes in general.”

[Printed, 10d.]

A.D. 1858, March 1.—N° 401.

FIELD, JOHN KINGSFORD.—(A communication from Anton Von Schuttenbach.)—“ Improvements in lamps.”

“ This invention has for its object improvements in lamps, which are so arranged as to generate from the liquid supplied to them an illuminating gas or vapour, by the combustion of which the light is produced; and consists in constructing such lamps in the following manner:—The exterior case of the lamp is a tube, which may be made to resemble a common candle; this case is closed at both ends, and contains the oil or liquid with which the lamp is fed. Immediately under the bottom of this reservoir is an egg-shaped vessel of about one inch or less in height, the lower end of which is made of thin sheet platina or other suitable metal. At its upper end this vessel communicates by two fine apertures with the reservoir above, and through these apertures the oil or other liquid descends, and falling on

" the platina or other bottom, which is heated as herein-after described, is converted into gas or vapour, and this passes away by a pipe proceeding up from the top of the lower vessel or generator into the reservoir, and the gas or vapour escapes from the mouth of this pipe and bubbles up through the liquor in the reservoir."

" At the top of the reservoir a jet or burner is placed, and from this the gas or vapour escapes, and is burnt like ordinary coal gas. From the space at the top of the reservoir, a small pipe also proceeds, and terminates in a jet under the platina or other bottom of the generator, and at this jet a small quantity of the gas or vapour is burnt, and by the heat it produces it generates a constant supply for the main burner."

" When the apparatus is in use, it is usually placed in a candlestick, and it is necessary that the candlestick used for it should be perforated in the socket to admit air to the lower flame."

[Printed, 1s. 1d.]

A.D. 1858, March 3.—N° 421.

SCOBLE, WILLIAM.—(Provisional Protection only.)—" Arranging the retorts, furnaces, flues, communications, and connexions, for the more economical manufacture of gas, and by which arrangement the generative heat may be obtained from either coal, coke, tar, or other similar combustible substances."

" First, we remove the underneath furnaces entirely, which leaves room for the introduction of more retorts, and place the furnace on the top of the benches, and conduct the draft downwards to the underneath flues, which communicate with the main shaft. The benches may be built single or double, and in continuous lengths, as may be required; they are run up with piers, arches turned, faces built, forming hot-air furnace chambers or cellars, through which the heat may circulate in any way we may require by placing flues and dampers in such places as may be found most advantageous."

[Printed, 5d.]

A.D. 1858, March 4.—N° 433.

BOULTON, SAMUEL.—(Provisional Protection only.)—" Obtaining by an improved method, certain products from materials used in the manufacture or purification of gas."

These products, namely, "ammonia, prussiate of potash, and "soda and iron, sulphur and sulphuric acid," are obtained from "any material containing oxide of iron, which shall have been "used in purifying gas." Instead of fusing the purifying material with potash, &c., it is digested in a solution of suitable alkali, to which a gentle heat is applied. Muriatic acid may be added, and the clear solution evaporated and crystallized. Muriate of iron may be added, and Prussian blue obtained. The ammonia evolved is condensed. The sulphur in the residuum may be sublimed; or it may be applied in the manufacture of sulphuric acid.

[Printed, 8d.]

A.D. 1858, March 8th.—N° 472.

CLARK, WILLIAM. (A communication.)—"Improvements in gas "meters."

This invention relates to arrangements which render the use of the hydrostatic tube easily practicable for establishing the constant level of the water in gas meters.

Consisting, first, in introducing the water into the upper reservoir by means of a siphon, the upper orifice of which may be closed by a screw plug, and allowing the gas contained in this reservoir to escape by a tube provided with a plug.

Second, in causing the hydrostatic tube to communicate with the back compartment of the meter by means of "an opening, "and separated from the front case by means of a small square "partition, the lower part of which partition dips in the water."

Third, in the isolating tube, with which the lower part of the hydrostatic tube is enclosed.

Fourth, in the connection between the hydrostatic tube and the overflow, with a view of rendering easy the regulation of the meter.

Fifth, in dividing the hydrostatic tube into two parts, one sliding on the other, which arrangement has the advantage of facilitating the regulation by keeping the tube in a vertical position.

[Printed, 8d.]

A.D. 1858, March 12.—N° 501.

CHELLINGWORTH, THOMAS TERTIUS.—"Improvements in "suspending chandeliers and gas pendants."

This invention consists in suspending and counterbalancing chandeliers and gas pendants by means of "helical springs."

" In constructing a chandelier or gas pendant according to this invention, a pipe or rod attached to the ceiling has a piston at its bottom end, and a larger tube, carrying the chandelier or gas branches, slides upon the said piston and pipe or rod ; the outer tube is terminated at top with a stuffing box, through which the pipe or rod works with an amount of friction which may be regulated by the extent to which the gland of the stuffing box is screwed up. Around the pipe or rod a helical spring is placed, occupying the space between the said rod and the outer tube ; the bottom of the said spring rests on the piston of the pipe or rod, and its upper end bears against the under side of the stuffing box on the top of the outer tube.

" Whenever the chandelier or gas pendant is depressed, the helical spring is compressed, the strength of the said spring being such that it nearly counterbalances the weight of the moveable part of the chandelier or pendant, which may be moved up and down by the application of a gentle pressure. Sometimes the helical spring is placed between the joists in the ceiling of the room, and connected by means of a chain or chains to the moveable part of the chandelier or gas pendant ; but the first described method of carrying this invention is preferred. The last described method is particularly applicable to large chandeliers or gas pendants."

[Printed, &c.]

A.D. 1858, March 16.—N° 537.

LE CAPELAIN, PHILIP.—" Improvements in dry gas meters."

By this invention the meter is arranged " with three or more measuring compartments, each compartment having an inlet and an outlet passage communicating therewith, whilst each passage is provided with a separate valve, so that there is an inlet valve and an outlet valve to conduct the gas to and from each compartment. The valves used are of the lever (or what is called flute key) kind, but the hinged ends thereof are free to admit of the valves resting fully on their seats, whilst the other ends are operated by rods from cranks or eccentrics (one to each valve rod) upon an axis caused to rotate by connecting rods from lever arms attached to the axes of motion of the moveable diaphragms. The inlet valves are in a chamber separated from the outlet valves. Each of the rods from the cranks

" or eccentrics to operate the valves is, during parts of the revolution of its crank or eccentric, moving without operating its valve, the valve at such time being closed upon its seat.

" The lever arms from the axes of motion of the diaphragms, " with their connecting rods to the axes of the cranks or eccentrics, are in a chamber separated from the gas.

" When three measuring compartments are employed, a fixed " partition is not required. Suitable indicating and registering " apparatus is employed, as is well understood."

[Printed, 1s. 7d.]

A.D. 1858, March 17.—N° 545.

HINE, THOMAS CHAMBERS.—"Improvements in lighting and " ventilating by gas."

For these purposes there is used "a series of horizontal flames " of gas produced by ordinary union, jet, or bat-wing burners " attached to a ring in horizontal position; and over this ring " Is placed a dome of glass or other translucent material (of " somewhat larger diameter than the ring), from the summit " of which passes a pipe, through which the products of com- " bustion are conveyed out of the room, to a chimney or some " other convenient place. The lower part of this dome may be " closed by a disc of glass, which may be connected to the " dome by a metal rim, the disc of glass or the metal rim " being sufficiently perforated for the admission of air from " the room for supporting combustion, and carrying on ven- " tilation. On the outside of the horizontal portion of the " combustion or ventilating pipe, another pipe of larger dia- " meter is used, and through the annular space between these two " pipes fresh air is conducted into the room, by a continua- " tion of the larger pipe, to the external air, and is discharged " at the ceiling over the vertical pipe, or at some other con- " venient part of the room, after having become warmed in " its passage in the annular space between the two pipes. " Where an increase of heat is required, the annular tube is " continued down to the vertical portion of the combustion " pipe, and admits the warmed air into the room at its lower " extremity a short distance above the summit of the glass " dome."

[Printed, 5d.]

A.D. 1858.—N^o 545.*

HINE, THOMAS CHAMBERS.—Memorandum of alteration to specification N^o 545 (1858).

This consists in the introduction of some additional words to render the description of the drawing attached to the specification more correct. Filed 17 February, 1859.

[Printed, 8d.]

A.D. 1858, March 18.—N^o 561.

CROLL, ALEXANDER ANGUS.—“Improvements in the manufacture of parts of dry gas meters.”

First, “in constructing the valve seats of dry gas meters, where the valves or covers slide uniformly to and fro over every part of such seats, I reduce the width of the surfaces or bars between the openings in the valve seats considerably [to prevent fluid condensing on such surfaces], and retain only such portion of those surfaces as is necessary to secure the due measurement of the gas; and, by preference, I form the centre opening or that for the exit of the gas larger than the others.”

Second, consists in making the alloy used for valves or covers and valve seats with a predominating quantity of tin. The patentee recommends for the valve seats the alloy to be compounded of 6 parts antimony, and 16 parts of tin; and for the valves or covers, about 8 parts of antimony, and 16 parts of tin. It is found important to have different alloys for the valves, and for the seats in making the alloys it is preferred to melt the metals separately and then mix them together.

[Printed, 8d.]

A.D. 1858, March 19.—N^o 574.

BRAMWELL, JOHN.—“Improvements in apparatus for the prevention of accidents arising from the escape of gas.”

“This invention relates to gas burners used for illuminating, heating, or other purposes, and consists in the adaptation thereto of apparatus, which causes the supply (of gas) to be shut off upon a diminution of heat taking place, owing to the flame having become extinguished. For this purpose, metal or other substance is heated by the combustion of the gas, and during that heated state the expansion of the

" said substance will cause a valve or cock to continue open ;
 " but, upon a contraction thereof, owing to decreased temperature,
 " the valve or cock will become closed. Many modifications
 " may be made without departing from the principle of this
 " invention, for instance, the expansion rod may be a coil or
 " of other form, and may be placed in any situation which
 " will admit of its being heated sufficiently, or a fluid may be
 " employed in place thereof."

[Printed, 8d.]

A.D. 1858, March 24.—N° 614.

GERNER, HENRY. — " Improvements in apparatus for the
 " manufacture of gas from oils or fatty or resinous matters."

This invention consists in the construction and adaptation of a retort. The retort may be made of a suitable form and material. It is fitted up in a metallic case, lined with firebricks, and provided with a perpendicular flue or chimney inside, and also with two or more pipes or flues leading from the outside to the internal flue ; the fire is placed at the bottom, and through these flues the heat may be conducted by means of suitable dampers. The top of the retort is fitted on and rendered gas-tight by means of a fusible metal joint. The interior of the retort is provided with a grating or false bottom, under which the oil is admitted by siphons, and upon which scrap iron, cokes, &c. are placed. The gas percolates through this heated medium, and escapes by means of a pipe to the condenser. Two passages or openings into the retort, capable of being closed by man-holes, are provided for the purpose of facilitating the cleaning.

[Printed, 10d.]

A.D. 1858, March 26.—N° 641.

HORTON, JOSHUA.—" An improvement or improvements in
 " the construction of the girders used in the guide framing of gas
 " holders."

This invention consists in making "girders of wrought iron
 " and cast iron combined ; the upper and lower edges of the
 " girder being made of angle iron, or T-shaped iron, and the web
 " of the said girder being made of plates of cast iron, bolted or
 " riveted to the bars of angle iron, or T-shaped iron, in a
 " suitable manner."

[Printed, 8d.]

A.D. 1858, March 29.—N° 662.

HORTON, JOSHUA.—“Machinery to be employed in punching “metals.”

This invention is “especially applicable to the punching of the “plates used in the manufacture of gas holders,” &c., and consists in machinery whereby “the metal plate to be punched is moved “under the punching machine, by being fixed on a travelling “table, the said travelling table moving with an intermittent “motion; the distance through which the said table travels be-“tween the periods of rest, during which the punching is effected, “being regulated by a template, or series of pattern holes, which “template, in conjunction with engaging mechanism, brings the “travelling table to rest in the required positions.”

The table is actuated by a pinion and rack, and slides upon bars. The plate to be punched is adjusted, as to position, by screw guide pins, and is clamped to the table. The precise distance to which the table carrying the plate shall move is regulated by a template fixed underneath the table, drilled with holes at the required distances from each other, and a steel peg or stop is caused by means of a spring, to engage in these holes, and arrest the movement of the table till a hole is punched. The motion to the table may be given by hand. The punching apparatus may be of the usual kind.

[Printed, 7d.]

A.D. 1858, March 30.—N° 678.

OLDFIELD, WILLIAM, and DIXON, THOMAS OGDEN.—“Improvements in gas burners.”

These improvements relate to the “application over the slits or “perforations of gas burners, of a cap or cover, forming a cham-“ber with a slit or openings therein, so that the gas to be con-“sumed passes from the first opening or openings into a chamber, “thence through a slit or openings therein for ignition; the “opening or openings in the cap or cover are so applied that the “direction of the flame thereby produced may be at an angle to “that which would be produced by the passing of the gas through “the first slit or openings; and the second slit or openings are “formed of a considerably larger area than the first.”

[Printed, 3d.]

A.D. 1858, March 31.—N° 683.

TODE, EDWARD HENRI.—(Provisional protection only).—“Im-
“ provements in apparatus for generating steam in steam boilers
“ by means of gas.”

“ For this purpose there is an inlet pipe, or there are inlet pipes
“ for the gas below the boiler, in which pipe or pipes are inserted
“ a series or sets of burners, the flame of ignited gas from each
“ of which is intended to pass into a metallic tube or vertical flue
“ passing upward through the body of water required to be
“ evaporated or converted into steam. By this means heat will be
“ communicated directly by radiation from the tubes or flues to
“ the water surrounding them, external air being admitted at the
“ lower end of each tube or flue, and through the burner in the
“ ordinary manner, in order to support the combustion of the gas
“ therein. The upper end of each tube or flue is connected with
“ a pipe [or pipes] in the upper part of the boiler, through which
“ the products of combustion of the gas may pass off as re-
“ quired.”

[Printed, 3d.]

A.D. 1858, April 1.—N° 696.

OOSTERLINCK, FRANÇOIS JULES EMILE.—“An improved
“ valve or plug for the passage of water or other fluids, [including
“ gas].”

“ The barrel of the valve is fixed to the mains or conducting-
“ pipes, in the usual manner, by proper flanges and screw bolts ;
“ the same has its entrance and exit openings contracted gradually
“ to a rectangular form, and inclined towards each other so as to
“ form two inclined sides, between which is inserted a trapezoidal
“ quadrangular prism, forming the plug for the valve for closing
“ up the space left between the two rectangular openings ; the top
“ and bottom of this plug are tapped for the insertion of a vertical
“ lifting screw, by which the plug may be lifted up in its highest
“ position, when the same closes the two rectangular openings, or
“ lowered till the plug is introduced in the reservoir, in which
“ state the valve is fully opened, and the water or gas allowed to
“ pass through freely, at the same time permitting them to deposit
“ the solid matters or the condensation water in the said reservoir,
“ which, when required, may be taken off from the body of the
“ valve, cleaned from its contents, and then attached again to

" this latter; or, in case the valve is to serve for gas supply, the reservoir is provided at the bottom with a hole closed by a plug, by means of which the condensation water may be let off."

[Printed, 7d.]

A.D. 1858, April 3.—N^o 703.

GREENSHIELDS, THOMAS.—(Provisional Protection only)—
" Improvements in treating ammoniacal liquor produced from
" coal in making gas, and obtaining useful products for making
" artificial manures."

The ammoniacal liquor is subjected to the decomposing action of sulphate of lime in suitable proportions. The sulphate of ammonia so formed is run off, and treated with sulphuric acid to decompose the hydrosulphuret of ammonia which may be present. The gas liberated may be burned; a small addition of sulphate of lime is then added to the liquor, and heat applied, and the clear liquor decanted and evaporated to a salt. A suitable addition may be made of sawdust, fine ashes, or spent tan to the liquor, and the mixture evaporated to dryness. The addition of common salt to the sulphate liquor will give sulphate of soda and muriate of ammonia; these may be separated by the usual means, or they may have mixed with them such substances as bran, husks of seeds, spent grains, calcined flints, &c. The residual carbonate of lime of the first process may be mixed with fine ashes, sawdust, &c., and will form a manure.

[Printed, 3d.]

A.D. 1858, April 21.—N^o 874.

COPCUTT, JAMES.—" Improvements in the manufacture of gas,
" and in the apparatus employed therein."

These consist, first, on manufacturing gas from "oils or grease," in the addition of a "small quantity of camphor dissolved in naptha," and distilling the combined matters.

Second, gas produced from oils or coal is passed over camphorated ether on its way to the burners.

Third, gas on being generated is passed through "red-hot melted metal," tin solder being preferred for this purpose.

Fourth, the liquid purifier is so constructed that the gas, being caused to enter near the bottom, has to pursue a devious course upwards through the liquor, by means of a series of discs fixed within the purifier.

[Printed, 3d.]

A.D. 1858, April 22.—N° 882.

CLEGG, SAMUEL.—“Improvements in gas meters.”

“The exterior case of this meter, which is partially filled with water, contains a drum made up of four excentric chambers, closed on all sides, but open at both ends; this drum is mounted on an axis supported at each end in bearings carried by the outer case; an air vessel is fixed on the axis of the drum, which, by its power of flotation, sustains the weight of the drum, and reduces the friction of the axis on its bearings. There is a passage through the centre of the air vessel, to allow the water to have free access to the interior of the drum. The gas enters the meter by a pipe, and enters the gas space, the aperture through which it enters having over it, as is usual, a valve, which descends to close it should the water be drawn out of the meter, the valve being mounted on a float. From the gas space the gas passes by a pipe to the interior of the drum, and from thence it passes in at the open end of one of the excentric chambers, which at the time is above the level of the water, and the pressure of the gas causes the drum to revolve. By the time that the mouth of one chamber becomes closed by passing below the water, the mouth of the next chamber will, by the revolution of the drum, become uncovered, and the gas will, in a similar way, enter it; after a time the smaller end of the first chamber at the exterior of the drum will rise above the water in the case, and will commence discharging the gas it has received into it; and before this chamber is completely submerged and emptied, another chamber will commence discharging, and so the operation continues.

“In order to prevent any splashing being produced by the exterior ends of the chambers as they leave the water, they are formed in the manner shewn at Figure 4, and in order that the gas may not partially escape from the chambers by bubbling through the water as the mouths of the chambers approach the surface of the water, which, were it allowed to take place, would cause the lights in connection with the meter to flicker, small tubes are employed, which connect, as the drawing shows, each of the chambers with the chambers in advance of it, and by these tubes a portion of the gas in the chambers, sufficient to relieve the pressure, is enabled to escape before their ends rise

" above the surface of the water. The recording apparatus is similar to that at present employed in gas meters."

[Printed, 8d.]

A.D. 1858, April 22.—N° 892.

PADDON, JOHN BIRCH.—“An improvement in gas regulators.”

“ This invention consists in imparting to the weight or valve “ [of gas regulators] a constant attraction, in order that imme- “ diately on the pressure inside the case of the regulator being “ diminished, the valve shall be drawn from its seat with certainty, “ and open the inlet passage. For this purpose the valve is “ formed of tempered steel converted into a magnet, as is well “ understood, and combined with it is a case or socket composed “ of soft iron; or otherwise impart attraction to the valve “ or open the inlet passage by means of permanent magnetic “ influence.”

[Printed, 5d.]

A.D. 1858, April 23.—N° 895.

GREENSHIELDS, THOMAS.—“ Improvements in purifying gas “ produced from coal, and obtaining ammoniacal and other alka- “ line salts.”

“ This invention consists,” first, in the use of a “solution “ formed by mixing a solution of chloride of sodium, a solution of “ sulphate of soda, and a solution of an hydrated alkaline metallic “ oxyde (caustic alkali), and using the solution thus made in a “ ‘scrubber’ or ‘scrubbers,’ or absorbed into porous material, “ and used in a ‘dry’ or similar description of purifiers, for “ removing ammonia, sulphur, and carbonic acid from gas.

“ Secondly, in the use of a solution of sulphate of soda, and a “ solution of an hydrated alkaline metallic oxyde (caustic alkali), “ the solution to be used separately in separate ‘scrubbers,’ or “ separately absorbed into porous material, and used in separate “ ‘dry’ or similar description of purifiers, or to be used by mixing “ the two solutions into one solution, and used in a ‘scrubber’ or “ scrubbers, or absorbed into porous material, and used in ‘dry’ “ or similar description of purifiers, for depriving gas of ammonia, “ sulphur, and carbonic acid.

“ Thirdly, in the use of sulphate of soda solution in combination with the process or processes herein-before described for manufacturing from the products obtained from the purification, muriate of ammonia, carbonate of soda, and recovering the sulphate of soda used, to be used again.

“ Fourthly, in the use of a caustic alkali in combination with the process or processes before described for removing from gas sulphur and carbonic acid, and for obtaining the sulphur, or for manufacturing sulphuric acid, and recovering the alkali, to be used again for removing sulphur and carbonic acid from gas.”

[Printed, 4d.]

A.D. 1858, April 26.—Nº 922.

LEE, EDWIN EVETTS.—“ Certain improved modes of applying vitrifiable materials for the ornamentation of metal buttons, clasps, and other articles of dress, and which said improvements are also applicable to the ornamenting of gilt jewellery, book clasps and mounts, also parts of lamp stands, chandeliers [whether for gas or oil], and other such like articles made in dies, or moulded or formed in any other way.”

“ This invention consists in ornamenting the description of articles named in the title, by piercing them in the desired shape or form, the edge of such piercing being afterwards slightly enlarged on the face side, and by laying such article as may be desired to be ornamented into a die in which it has been formed, or a mould made for the purpose. I apply crystal or opaque glass or other vitreous matters in a hot or semi-fluid state, which, in pressing it from the back, it passes through the pierce hole or holes in the design, and spreads itself on the other side to the clear form of the die or mould in which it is laid.

“ It is evident that such mode of ornament becomes very secure, and cannot be again removed without pulverising the glass, or melting or cutting away the metal.”

[Printed, 10d.]

A.D. 1858, May 7.—Nº 1028.

BOTTEN, CHARLES, Junior, and TAYLOR, NATHANIEL FORTESCUE.—(Provisional Protection only.)—“ Improvements in

" means or apparatus employed in measuring and in regulating
" the flow of gas and other fluids."

These consist, first, in "causing the gas to be measured by dry
" gas meters to pass first into the valve chamber, so as to press
" on the outer surface thereof, with a tendency by its pressure to
" keep the valves to their seats."

Second, in constructing "the outer rubbing surfaces of the
" valves, or those parts in contact with the outer edges of the
" seat, sufficiently wide that at each extreme motion one of these
" rubbing surfaces of the valve may be overhanging its seat."

Third, "when forming moveable partitions or diaphragms of
" several plates of metal united by leather or other suitable flexible
" material, in employing a large central plate, and three, four, or
" more narrow plates around the edge, the centre plate being
" united to those around the edge of it, as also these edge plates,
" to the case, by prepared leather or other suitable flexible
" material; and to ensure the correct relation to or operation of
" those plates in forming a moveable diaphragm or partition, we
" connect them together at suitable places by connecting links."

" Fourth, relates to the arrangements and construction of
" the valves, of which two pairs are connected to work together,
" each operated by a spring, with a tendency so soon as they
" have passed the centre of their motion to be thrown to the
" extreme position in one or the other direction. The connecting
" bar or bars between the pairs of valves have slight play, and the
" supply of the water or other fluid to such measuring apparatus
" is regulated by causing the fluid to pass through a chamber con-
" taining a float carried by a lever arm attached to a valve for
" closing the aperture of supply to such chamber, in such manner
" that as the pressure of fluid increases the float rises and closes or
" partially closes the valve at the supply passage."

" In employing a moveable or flexible partition to operate in
" closing or partially closing the supply valve in regulating the
" supply of gas, the weight is applied to the lever arm of such
" valve with a tendency to open it, in place of as heretofore to
" close it, by which is required a less counter-balance weight to
" the partition, and these counter-balance weights are so placed
" that by moving in or out in the raising of the partition the
" pressure exerted is diminished."

[Printed, 3d.]

A.D. 1858, May 20.—N° 1126.

COPCUTT, JAMES.—“An improvement in preparing materials “employed to obtain light when using oxygen and hydrogen “gases.”

This consists in “mixing with the gypsum or other substances “usually employed in obtaining light, when using oxygen and “hydrogen gases, about 5 lbs. of sulphur to a ton of the sub-“stance; the mixture is raised to a red heat in a covered crucible “or oven, and is kept at this heat for about 24 hours; it is “afterwards allowed to cool, and cut into pieces of suitable form “for use.

“The light is obtained by throwing an ignited jet of oxygen “and hydrogen gases on the gypsum or other substance pre-“pared in this manner, so as to bring it to a white heat, just in “the same manner as when gypsum or other substance in an “unprepared state is employed.”

[Printed, 3d.]

A.D. 1858, May 21.—N° 1133.

ADAMSON, JOHN.—“Improvements in the manufacture of “parts of gas meters.”

“The improvements relate, first, to that part of the meters for “indicating the measurement of gas commonly called the index, “and consist in forming the framing of the index apparatus of “hard white metal cast in metal moulds (steel by preference) “previously heated, and adapted not only to produce the general “outline of the framing, but also the various perforations therein “for the pillars and for the various axes, without the necessity for “drilling or broaching, by which not only economy in labour “and the least amount of friction are secured, but the fixing of “the moving parts by corrosion is prevented. Also the improve-“ments relate to forming part at least of the tooth gear of such “hard white metal.

“Secondly, the improvements relate to forming of hard white “metal the pins from the guide rods of the valves, by which the “connecting rods from the valve crank are connected to the “valves in dry gas meters, and obtaining facility for adjustment “of the valves at that part by fixing that stud in a piece of tinned “brass or other hard metal capable of receiving and being “soldered to a tinned iron or other such hard metal pin from the

“ valve, and to which is also attached one of the guide rods
 “ formed of hard white metal.

“ Thirdly, the improvements relate to forming the double crank
 “ axis of dry gas meters in two parts, with a clutch or such like
 “ connexion to the parts outside the valve chamber, so formed
 “ that the parts will couple together only in one body, thus
 “ securing ready access to the stuffing box, and in cases of after
 “ repair the original adjustment of the double crank.”

[Printed, 9d.]

A.D. 1858, May 22.—N^o 1154.

CLARK, WILLIAM.—(A communication from François Pallard, sen.—(Provisional Protection only.)—“ Improvements in machinery or apparatus for moulding articles of cement.”

“ This invention relates to a system of manufacturing by mechanical means paving blocks or squares, flags, bricks, sculptured ornaments, pipes or conduits for gas, water, &c., and other articles of cement.

“ Plain articles, or those which can be expressed from a mould, are conducted into a mould frame, which shapes them. When shaped and solidified, they are taken out of their respective moulds by means of a machine of simple construction, having a lever, cam, and treadle, which removes the bottom of the mould and permits of the moulded articles being taken out.

“ For moulding pipes a hollow mould is used, having a conical part, which forms the collar or socket; in the centre of this tube there is another tube having a longitudinal hinge, which forms a core. In order to remove the pipe from the mould, the moveable axis is removed from the hinges, which allows of the core being withdrawn; the pipe is then taken out of the exterior mould all in one piece.”

[Printed, 3d.]

A.D. 1858, June 3.—N^o 1248.

SCHOLEFIELD, THOMAS.—“ Improvements in gas meters.”

“ These improvements relate to the class of meters called wet gas meters, and more particularly to the kind known as the ordinary consumer’s meter, in which the true level of the water in the measuring drum is kept up by means of a water lifting or compensating apparatus, actuated by the drum

" shaft. They consist, 1st, in making use in the interior of the meter of a [incorrodible] bell, with hydraulic seal, serving to conduct the gas to the measuring drum; underneath this bell is the float (which works the valve by which the gas is admitted), and also the upper part of the siphon or spout. The said bell replaces the upper part of the division plate which in ordinary meters separates the cylindrical compartment containing the drum and measured gas from the front box in which is the measured gas; 2ndly, a special form or shape given to the outside casing of the meter, with the object of simplifying the manufacture thereof, being made in a cylindrical form, the interior of which is partially divided into two principal parts by means of a segmental division plate, the back division containing the measuring drum, and the lower part of the front division forming the supply waste water and condensation trough, and containing further the receiver and remainder of the working parts of the meter; 3rdly, a special arrangement for working the water-lifting scoop made use of in compensating meters, which arrangement consists of a bell crank lever."

[Printed, 7d.]

A.D. 1858, June 5.—N° 1267.

CARTER, HENRY.—"Improvements in gas burners." (Provisional Protection only.)

"The burner is made of two parts, both being furnished with jets, the upper one being formed in the usual manner and the lower one having smaller holes or orifices; the said lower part or jet at its head fitting or slipping into any of the required pipes, sockets or elbows.

"One effect of passing the gas through the small orifices of the lower jet, before arriving at the top or usual jet, is that a N° One lower jet produces a N° 3 upper jet, and a N° Two lower jet a N° Five upper jet, and so on in the same proportion."

"Another effect is that the aforesaid combination of jets forms a complete regulator, so that the gas escapes evenly and burns without the starting common to the jets in ordinary use, and also effects a great economy in the consumption of gas.—A chamber can be introduced between the jets if found desirable."

[Printed, 8d.]

A.D. 1858, June 11.—N° 1328.

BARTHOLOMEW, GEORGE.—“ Improvements in that description of gas meters commonly called wet meters.”

These consist in “ arranging wet or water meters so that the “ drum, or measuring chambers, acting on suitable index apparatus, are made to float in the water, or other fluid, contained “ in a case or reservoir; whereby such drum or measuring “ chambers, whilst such meters are in action, are sustained at “ a uniform and determined line of immersion in such water “ or other fluid, whatever may be the height of the water in such “ case or reservoir, and unvarying measurement thereby obtained.”

The measuring chambers are contained in a case which floats up or down according to the level of the water in the outer casing. The index is supported by the inner floating case so as to rise and fall with it. Valves are applied to shut off the gas, should there be a large over or under supply of water.

[Printed, 10d.]

A.D. 1858, June 14.—N° 1344.

NEALL, GEORGE.—Improvements in gas stoves for warming, “ cooking, and other purposes; as also in the saucepans, kettles. “ and other utensils to be used with the same.”

These improvements relate to the general arrangement of apparatus for cooking and heating by the aid of gas, and consist, generally, of a case or cylinder, made in preference of corrugated metal, fitted up inside with a ring of flames, and provided with stands to hold the articles to be cooked, dripping pan, &c. The upper part of the case is enclosed by an air-tight cover concentric with it, which causes the hot or burned air escaping by holes at the top of the case to return and descend by the space left between the case and the cover. The outer surface of this cover gives an effective radiation. The gas consumed may be mixed in a tube or pipe with air before ignition, which will prevent soot being formed. The cooking vessels, particularly those for boiling, have concentric rings of tin attached to the bottom, from half an inch to an inch deep, and about an inch from each other, for the purpose of holding or confining the heat.

[Printed, 9d.]

A.D. 1858, June 17.—N° 1372.

ALLARDICE, JOHN, and MILLER WILLIAM.—“Improvements in gasaliers.”—(Provisional protection only.)

“This invention consists in constructing pendant gasaliers, of either the fixed kind, such as crystal gasaliers used in drawing-rooms, or the sliding kind, such as the commoner bronze gasaliers, with a sliding tube bearing one or more additional burners, and admitting of such additional burner or burners being brought down considerably below the level of the main burners, so as to afford a stronger local light at a level convenient for reading or other occupation. Such sliding tube is never detached from the gasalier, but is thrust up inside the centre tube of the gasalier when out of use, so that no escape of gas can take place, as with tubes which are made to be detached from the gasalier. In a modification of the contrivance suitable for crystal gasaliers, a sliding tube with two additional burners may be arranged to be entirely concealed within the crystal ornaments when out of use, the burner branches being made to fold up, so as to occupy a very small space. These burner branches may also be contrived so that the turning of them up or down admits the gas to the burner or shuts it off, additional stop-cocks being thereby rendered unnecessary.”

[Printed, 3d.]

A.D. 1858, June 23.—N° 1415.

SPENCER, THOMAS.—“Improvements in the treatment of iron ores and feruginous sands, and certain applications arising therefrom.”

This invention, in so far as it relates to gas, consists in the use of a compound of iron and carbon, called indifferently “Ferrosodicarbide,” “oxy-carbide, or “magnetic carbide,” for the purposes of purifying the gas from sulphur and ammonia. The carbide in powder, slightly moistened with water, and mixed it may be with such substances as sand, sawdust, lime, or gypsum, is used in the same manner as, and with similar apparatus, to that employed in ordinary methods of purifying gas, especially by that termed the “dry lime process.” The carbide may be revived by exposure to the air. When fully saturated, the sulphur may be distilled off.

The carbide may be obtained from ores of iron or feruginous sands; in preference, from "chalybite" or "spathose ores," or from "hematite ores," or "specular iron ore," by heating in a closed vessel the ore, in small pieces or in powder, to a dull red heat, when mixed with some matter containing about 20 per cent. of available carbon. The carbonaceous matter employed in preference may be "granulated charcoal, sawdust, or granulated coke." When coal is employed, it should contain little bitumen. The above carbide is also well adapted for the filtering and purifying of "water;" the purification of "saccharine fluids;" the purification of "alcoholic fluids;" the purification of "air;" and may be applied to the manufacture of iron and steel.

[Printed, 5d.]

A.D. 1858, June 23.—N° 1418.

CLIBRAN, WILLIAM, and CLIBRAN, JOSEPH.—"Improvements in apparatus or arrangements for distributing, governing the pressure of and lighting gas."

These relate, first, to a mode of joining the ends of gas pipes, and consists in forming the ends of the pipes after the manner of a "ball and socket" arrangement. These ends are provided with suitable ears, through which bolts are passed and hemispherical-formed nuts are screwed up.

Secondly, in combining together a gas governor and a stop-tap. In this case there is superadded to the gas regulator a valve-seating, and a valve attached to a screw with gas-tight packing, which may be actuated by a hand-wheel.

Thirdly, relates to improvements in small gas governors, and consists "in forming an annular cavity under [?] the seating part of the valve, which cavity, when the valve-seating is fixed in the casing part of the gas governor, forms a portion of the passage to the outlet pipe; by this arrangement the mercury [in the gas regulator] cannot enter the return or valve passages."

Fourthly, to arrangements for lighting gas (especially street) lamps without opening the door, &c. of the lamps, and consists in the application of a short "flash-pipe," one end of which is placed over the burner and the other end is brought to the outside of the lamp. When a light is applied to the outer end of this flash-pipe, the flame goes back and ignites the gas. The flash-pipe is made to swivel, so that its end may be brought over the

burner or removed from it at pleasure; or the gas burner itself may be so arranged as to be capable of being swivelled to one side of the lamp, in which there is a perforation, and through which the gas may be ignited.

Fifthly, relates to the "combination of a gas governor and stop-tap with the last-described method of lighting, so that the swivel movement of the burner answers as well for turning on and shutting off the gas, which is accomplished by fixing the gas governor on the end of the plug of the tap, having a gas passage in the direction of its axis, the burner being fixed in a pipe leading from the outlet passage of the gas governor, so that both the burner and gas governor swivels with the movement of the tap or plug."

Sixthly, a lever may be applied to the gas tap when in combination with a small gas regulator, and placed, as commonly, in the centre of the lamp, which can be actuated without the employment of a ladder, so as to open or shut off the gas, by the lighting lamp passing up through an opening in the bottom of the lamp.

[Printed, 10d.]

A.D. 1858, July 8.—N° 1534.

DEMOULIN, PIERRE FRANCOIS, and COTELLE, JOSEPH.—
" Improvements in treating the heavy oils obtained from the distillation of coals, schists, and other hydrocarbons."

" The method of purifying and treating the said heavy or tarry oils is as follows:—Supposing we have to act on about 220 lbs. of the said oils, we introduce them in a vessel, which can be properly closed, and we ultimately mix with the said quantity of oil about 11 gallons of water, about 2lb. 3oz. of chloride of lime, about 4lbs. 6oz. of soda salt, (carbonate of soda), and about 1lb. 2oz. of manganese (peroxide of manganese) [more or less]. The entire is then violently shaken, say, for about an hour, more or less, and is then left to settle for about 24 hours, after which the supernatent oil is decanted from the sediment, and distilled in any suitable distilling apparatus, so as to bring the oil to a specific gravity of about 90° to 92° of Vignie's areometer, after which it is submitted to rectification by mixing with about about 220lbs. of the oil, about 55lbs. of resin oil; by this latter operation the oil is deprived of its gummy parts, and is at the same time entirely deodorized. The distillation above mentioned, may be effected

" beforehand on the heavy oils not previously defecated and
" decanted from their sediment. The purified oil obtained by
" by this method may be burned in the ordinary naptha or schist
" oil lamps, and we put over the burner a small hollow conical
" cap of glass" in preference, "and provided in the centre with a
" circular opening of sufficient width for the flame to pass
" through; this cap is inserted in a circular ring fixed on the
" bottom of the gallery for the ordinary glass chimney."

[Printed, 5d.]

A.D. 1858, July 12.—N^o 1559.

LOACH, JOHN, and COX, JOHN.—" Improvements in orna-
" menting glass with perforated metallic and other plates."

The glass so ornamented may be applied to various useful pur-
poses, among others to the ornamenting of "gas pendants" and
"chandeliers." The invention consists, first, in composing "an
" ornament of any suitable material, transparent or opaque, and
"perforated in any suitable design, and coloured or orna-
"mented in any suitable way, and such sheets so treated to be
"cut up to the desired size or sizes, and to be secured between
"two pieces of flattened glass [or curved or bent glass], such
"as common window glass; in this condition the compound
"pane thus produced is fit for applying in any situation where a
"screen or blind may be desired, without entirely stopping out
"the light, which may be regulated according to the amount or
"extent of the perforations pierced out from this part.

" The second part of this invention is similar to the first, with
" the exception that we purpose using but one piece of glass, and
"protecting the perforated plate, which of course will only be
"ornamented on the front side, in any suitable way at the back."

[Printed, 4d.]

A.D. 1858, July 12.—N^o 1565.

DEFRIES, NATHAN.—" Improvements in apparatus for mea-
" suring gas."

" For these purposes, in order to keep up the water to a
" constant level in a gas meter, there is a vessel containing an
" additional supply of water affixed to the meter, from which
"there is a descending pipe with a covering valve, in like manner

" to an oil vessel of a lamp, to facilitate the filling and refixing of
 " the water supply vessel to the gas meter, but such valve is open
 " when the vessel is fixed to the meter and the meter is in use.
 " The pipe of the water supply vessel descends into a water
 " chamber in connexion with the meter, in such manner that the
 " water in the meter and the water in the chamber will at all
 " times stand at a like level. In the event of the water in the
 " meter and in the water chamber connected therewith evapo-
 " rating or otherwise falling below the proper level, water will be
 " allowed to descend from the vessel containing the additional
 " supply, by reason of provision being made for the passage of
 " air from the outer atmosphere into such water vessel where the
 " water falls too low, but the flow of air from the atmosphere
 " into the additional water supply vessel is shut off as soon as
 " the proper water level is obtained in the meter."

[Printed, 2d.]

A.D. 1858, July 13.—N° 1570.

FUSSELL, JAMES ALFRED.—"A new or improved method of
 " ornamenting chandeliers, pendants, and brackets for gas and
 " other lamps, which method of ornamenting is also applicable
 " to curtain bands."

" This invention consists in ornamenting chandeliers, pendants,
 " and brackets for gas and other lamps, and also curtain
 " bands, that is to say, ornamenting the said articles by the
 " application thereto of mirrors or pieces of looking-glass
 " inserted in metal frames at such part or parts of the said
 " articles as it is wished to ornament."

[Printed, 7d.]

A.D. 1858, July 21st.—N° 1650.

MEACOCK, JAMES.—"Improvements in wet gas meters."
 (Provisional Protection only.)

" These improvements consist in fitting a tube to the valve box
 " in wet meters, which leads directly into the spout from whence
 " the gas enters the drum and wheel of the meter; in fitting the
 " float at the back of the drum; and in attaching a double valve
 " or stop to the spindle of the float or to a spindle connected by
 " a lever or levers to the float.

" Upon any attempt being made to tamper with the meter by
" tilting it upwards or downwards the float would either rise or
" fall and stop the outlet pipe by bringing one or other of the
" valves or stops into action."

[Printed, 3d.]

A.D. 1858, July 28.—Nº 1703.

NEWTON, WILLIAM EDWARD.—(A communication.)—“Im-
“ provement in gas meters.”

This invention consists in constructing a wet meter after the following manner:—Within the usual outer casing is placed a cylinder or drum mounted horizontally between two centre screws, and placed within it and concentric with it is another cylinder of smaller dimensions. The outer cylinder is filled with water so high as to reach the circumference of the inner cylinder, thus dividing the interior of the outer cylinder into two portions or divisions—the lower one being filled with water. The upper or empty portion of the interior of the outer drum is then divided by two gas-tight diaphragms forming a small chamber in which are placed the valves; on each side of the diaphragms are now two spaces for measuring the gas. The gas being suitably introduced through the valve into one of these spaces, while at the same time an open communication being made for the escape of the gas from the other or opposite space, the drums are thereby caused to rotate or rather oscillate in one direction until a spring being disengaged liberates a lever and weight which falling causes the valves to be shifted and the direction of the gas and movement of the drum to be reversed. The water in the lower part of the drum forms a constant seal between the two gas spaces. The registration of these oscillations is effected through a cam lever, &c., combined with pawl and ratchet wheel acting on the usual index.

[Printed, 9d.]

A.D. 1858, July 30.—Nº 1724.

BESSEMER, HENRY.—“ Improvements in the treatment of pit
“ coal, and in the separation of foreign matters therefrom.”

“ These consist, firstly, in the separation of pure or nearly pure
“ pit coal from shale, carbonate of lime, silica, and pyrites, or
“ other earthly or mineral substances, and from coal impregnated
“ or combined therewith, by causing the purer portions of the

" coal to float on the surface of a fluid of greater specific gravity than pure coal, and less than the less pure coal and the substances to be separated therefrom." A solution of chloride of calcium of the proper specific gravity is preferred for the above purpose.

" Secondly, the washing and separation from purified pit coal and from the earthy or mineral substances obtained therefrom, of any dense fluid that may have been employed in the separation of such coal from mineral or earthy substances; and also the evaporation of such fluid and its restoration to that degree of density as will enable it to be again employed in the purification of coal."

[Printed, 5d.]

A.D. 1858, August 2.—N^o 1752.

GREAVES, HUGH.—"Improvements in constructing streets, roads, and ways, thereby facilitating traffic and providing for the more convenient conveyance of sewage, drainage, gas, and water supplies, and telegraphic wires along the same."

" I form the foot pavement, the level of which may, as usual, be higher than that of the road, of open work plates or grids of cast iron, supported in such manner as to leave a space beneath, along which the pipes for conveying the gas and water supplies may be conveniently laid, and which will receive the mud, &c., which may fall through the openings from the upper surface of the pavement.

" The curb, which is also formed of cast iron, is constructed in the form of a hollow channel or pipe, having openings along its sides to admit the surface water from the roadway and foot pavement, and communicating at short intervals with tanks sunk to a lower level, for the purpose of receiving the more solid matters which may be carried off with the water. The pipe or channel curb may, in some cases, be formed with one edge rail of a tramway attached thereto, the other rail of which may be laid in the roadway, and also formed as a pipe or channel, as before described.

" By these arrangements the storm or surface water may be kept comparatively pure, and conveyed, as required, apart from the sewage of dwelling houses, &c., this pipe or pipes being made to carry a line or lines of railway (accessible at intervals by

" steps or otherwise from the street level), upon which carriages
" may travel for the purpose of relieving the road below from a
" portion of its traffic. The columns before named may also be
" made available for supporting other pipes for the conveyance
" of gas, water supplies, and telegraphic wires."

[Printed, 10d.]

A.D. 1858, August 3.—N^o 1755.

DAVIES, GEORGE (A communication.) (Provisional Protection only.)—" A process and apparatus for the extraction of oils for illuminating and lubricating purposes, and of carburetted hydrogen gas from the native bitumen of the West Indies."

The apparatus used may nearly resemble that employed in the manufacture of coal gas : but the vapours being heavy, it is necessary to have the upright pipe short, and the main slanting towards the condenser. A shower of water is employed in the condenser for the purpose of condensing the vapours. The oil is then washed with sulphuric acid and afterwards with water, and to the last washing is added some " argil torrefied and sifted." The oil is then distilled by a regulated heat, so as to produce various qualities of oil, which may be applied to various purposes, such as gas making, burning in lamps or candles, lubricating, &c. Paraffine may also be obtained from the oils from the native bitumen of Cuba.

[Printed, 3d.]

A.D. 1858, August 6.—N^o 1791.

BOVILL, GEORGE HINTON.—" Improvements in the manufacture of gas; also in the manufacture of coke and other fuel."

" In the manufacture of gas according to this invention retorts
" from which gas is collected are combined with other retorts or
" ovens by which only coke is produced, the gases produced in
" these latter retorts being consumed, and serving by their com-
" bustion to maintain the necessary temperature both in the gas
" retorts and in the coke ovens, or those retorts by which coke
" only is produced, [suitable flues being provided to conduct the
" gases as required]. The retorts are arranged in a vertical posi-
" tion, or so slightly inclined that the materials which they con-
" tain will descend in them by their own weight. Within reach of
" the gas retorts there is a tube passing from end to end of the re-

" tort, and perforated to facilitate the escape of the gas ; this tube
" is formed in sections, each of which is (say) one-third of the
" length of the retort, and has a flange at its end so nearly fitting
" the retort as to prevent the material which the retort contains from
" passing it ; these flanged pipes are employed to facilitate the
" charging and discharging of the retort when a part only of the
" charge is drawn at one time, and which is done in the following
" manner :—The cover at the upper end of the retort is removed,
" and a bar is introduced into the interior of the tube within it,
" so as to get a firm hold of the two uppermost sections ; the
" bottom is then removed from the retort, when the lowest section
" of the tube, with the coke which it sustains, falls out ; the bot-
" tom is then replaced, and the other sections of tube allowed
" to descend on to it, thus leaving the upper third of the
" retort vacant to receive the charge. The coke ovens are charged
" from time to time in a similar manner, that is to say, a charge
" equal only to a part of the contents of the retort is introduced
" at one time, by which excessive cooling of the retorts and ovens
" is avoided. In the coke ovens it is not necessary to use tubes,
" as when discharging the coke, that which is above the portion
" to be discharged is supported for the time by bars introduced
" for the purpose. The gas may be collected either from the top
" or the bottom of the retorts.

" Peat may be mixed with tar for fuel by taking the pieces
" of peat in the form in which they are cut, but first dried, and
" and immersing them in the tar ; and the peat so prepared by
" immersion in tar, and afterwards baked in an oven or retort at
" about 400° or 500° , without raising it to a red heat, is suitable
" for use as fuel for many purposes for which unprepared peat
" cannot conveniently be employed. The tar may be forced into
" the peat by means of a pump."

[Printed, 1s. 2d.]

A.D. 1858, August 17.—N° 1817.

LICHTENSTADT, DAVID, and DUFF, CHARLES.—(A communication.)—(Provisional Protection only.)—" Improvements in
" treating tan and tanning refuse, to obtain valuable products
" therefrom."

" After the tan has been dried by the air, it is distilled in close
" iron cylinders, and which cylinders are in communication with

" iron pipes so constructed that the ligneous acid and the tar runs " into a lower cistern, and the hydro-carbonic gas from thence is " conducted under the fire-place of the above-mentioned distilling " apparatus to be consumed. After this process charcoal remains " in the cylinders, which is removed and prepared in different " ways; for gunpowder and pyrotechnic purposes; for filtering, " sugar refining, deodorizing, bleaching liquids, &c."

[Printed, 3d.]

A.D. 1858, August 21.—N^o 1907.

LAMING, RICHARD.—(Provisional Protection only.)—" Improvements in purifying gases and liquids, in preparing " purifying liquids, and in apparatus for apportioning or " measuring liquids."

This invention consists :—“ 1. In removing sulphuretted “ hydrogen from foul gases by the catalytic use of certain metals “ in combination with oxygen, as, for example, the precipitated “ sesquioxide or peroxide of manganese.

“ 2. In removing sulphuretted hydrogen from gas liquor or “ other foul liquids by the use of the re-agents above indicated.

“ 3. In a “tumbling box” or fluid measurer controled by a “ weight spontaneously shifting, as need requires, from one part “ of the apparatus to another.”

[Printed, 3d.]

A.D. 1858, August 23.—N^o 1909.

PULS, FRANCIS.—“ Improvements in the distillation of coal.”

“ This invention consists in distilling coal of any description, “ with the addition of earthy, alkaline, or metallic oxides, peroxydes, sesquioxides, or protoxides, or the carbonate or hydrates “ of those substances, or a mixture of any two or more of “ them for the purpose of obtaining gaseous products and tar “ from the coal distilled [of purer qualities.] The residuum “ remaining in the retorts may be sifted, and the coke or “ breeze may be used as fuel for heating, and the powder, “ which will contain the greater portion of the lime or other “ substances originally mixed with the coal, may be used again. “ But in order to deprive this powder of as much of its carbonaceous matters as practicable before using it in this manner, “ it is exposed to the open air immediately after it has been

" withdrawn from the retort, and whilst still glowing hot, so that
" the carbon may be burnt out of it."

[Printed, 3d.]

A.D. 1858, August 23.—Nº 1910.

PULS, FRANCIS.—“ Improvements in the distillation of bituminous matters and gas tar.”

“ This invention has reference to the distillation of bituminous matters or gas tar, which it has hitherto been found difficult to distil in practice in consequence of the residuum of the distillation adhering so strongly to the interior of the retort ; and consists in distilling such bituminous matters or gas tar with the addition of, or mixed in suitable proportions with earthy, alkaline, or metallic oxides, peroxides, sesquioxides, or protoxides, or the carbonates or hydrates of those substances, or a mixture of any two or more of the above-mentioned substances, for the purpose of preventing the adhesion of the residuum to the interior of the retort, and for the purpose of obtaining fluid, solid, and gaseous hydro-carbons or products from such bituminous matters.

“ The residuum remaining after the distillation of the bituminous matters, when drawn glowing from the retort, may be laid in heaps, and in that manner left to burn until all or nearly all of the carbon in it is burnt away, and the lime or other materials will remain in such a state, that they may be used again when mixed with the proper quantity of water.”

[Printed, 3d.]

A.D. 1858, August 26.—Nº 1935.

RODIER, SAMUEL NEWMAN.—“ Improvements in apparatus for regulating gas.”

“ For these purposes, when the apparatus is to be applied to each burner, there is introduced a small chamber below or near the burner. The gas is supplied to this chamber by means of a pipe, the exterior of which, it is preferred, should be largest at its upper end and tapering downwards. At the upper part of this supply-pipe there are notches or openings for the gas to pass through. Over the supply-pipe is a light hollow cap, the interior of which corresponds in form with the exterior of the supply-pipe, but so much larger in diameter as to admit of the gas flowing freely down between the interior of the cap and the

" exterior of the supply-pipe, when the cap is resting on the top
" of the supply-pipe. The lower part of the cap is so formed that
" when lifted by the pressure of the gas the lower edge of the cap
" comes nearer and nearer as the cap is more and more lifted to the
" supply-pipe, and thus reduces the size of the passage or space
" which is between the interior cap and the exterior of the supply-
" pipe. It is preferred, when very light caps are used, to form the
" tops thereof of talc, though other materials may be used; and in
" order to prevent the cap (or it may be called the supply-valve,
" for it regulates the supply of gas to the burner) from rising too
" quickly, in case of any sudden change of pressure; there is a
" chain or series of light links or weights suspended over the cap,
" and these are lifted in succession as the cap is raised by the
" pressure of gas. When a regulator is to be used to regulate a
" series of burners, then similar apparatus is employed of larger
" dimensions, according to the number of burners to which the
" same is to be applied. The burner tube is fixed to the chamber
" by means of a screw, by which the height to which the cap may
" be raised by the pressure of the gas may be regulated, or the
" extent of movement of the cap or valve may be otherwise
" regulated."

[Printed, 7d.]

A.D. 1858, August 27.—Nº 1940.

MATLEY, FRANCES.—(A communication.)—(Provisional Protection only.)—"Improvements in apparatus for regulating the flow of gas, and for improving its illuminating power."

This invention relates to the combination, in one apparatus, of a mode of regulating the flow of gas, and of a mode of enriching the gas after it has passed through the regulator.

The regulator consists in passing the gas first into a receiver, which may be floated in mercury, the sides of the receiver being perforated with longitudinal openings. The greater or less immersion of this receiver closes or opens these openings, and so regulates the flow of the gas. The gas after it has passed this receiver enters a vessel inverted over some suitable fluid, which becomes elevated or depressed, according to the pressure of the gas so admitted. Connected to this vessel is one end of a lever, the other end of which being connected to the top of the receiver first mentioned; therefore when the inverted vessel becomes else-

vated by reason of extra pressure of gas, it causes the depression of the receiver into the mercury, thereby closing partially the longitudinal openings, and cutting off the supply of gas to the extent necessary to restore it to the required and proper pressure. The gas is then caused to flow into a vessel containing a suitable enriching hydrocarbon, where it becomes enriched, and then passes on to the burners. The gas is discharged into this enriching chamber under a perforated plate, which is floated on the surface of the hydrocarbon; by this means the gas and hydrocarbon are brought into more immediate contact with each other.

[Printed, 5d.]

A.D. 1858, August 27.—N° 1942.

ESSON, WILLIAM.—“Improvements in wet gas meters.”

“This invention relates to a system or mode of maintaining the proper water level in wet gas meters by compensating for the evaporation or other loss of the water in the meter,” and consists as follows:—“The upper part of the meter is furnished with an air-tight water supply tank, which communicates with the measuring chamber by means of a feed or supply pipe, so disposed as to be always sealed. The supply tank is provided with an air pipe, the lower mouth or orifice of which coincides, or nearly so, with the proper water level, and a float is contained therein connected with the ordinary gas valve, for the purpose of shutting off the gas when the tank is empty or the water therein too low. The water is supplied to the tank by a supply pipe, which is kept constantly sealed. When the water in the meter descends below its proper level, by reason of evaporation or other loss, it leaves exposed the lower orifice of the air-pipe, and allows the gas to ascend there through, and the water in the upper tank to descend through a pipe for that purpose, until the air-pipe is sealed again by the water in the meter regaining its proper level.”

[Printed, 7d.]

A.D. 1858, August 27.—N° 1943.

HART, HERBERT WILLIAM.—“Improvements in the application of gas to chandeliers.”

“This invention relates to an arrangement of parts by which the hydraulic joint of the ordinary hydraulic double or treble

“ tube telescope chandeliers may be dispensed with, as also the “ stuffing-box joint of the ordinary double tube dry telescopic gas “ pendants or chandeliers, and consists in connecting the upper “ tube or service, by means of a flexible pipe, with the body of the “ chandelier. Such flexible tube, whether made of india-rubber or “ any other suitable material, must be of size sufficient to supply the “ greatest number of lights belonging to the chandelier, and coiled “ or twisted spirally [or in a crinkled form] within the sliding “ tube, the said elastic tube being wired internally and externally, “ or otherwise so formed as to afford the amount of elasticity or “ power of extension, while at the same time acquiring very little “ elastic force, whether expanded or contracted. The said elastic “ pipe may be drawn up or contracted to its required dimensions “ by any of the ordinary well-known means, taking care that it is “ such as to maintain a clear passage for the gas, whether the “ chandelier be raised or lowered, and the elastic tube expanded “ or contracted.”

[Printed, 5d.]

A.D. 1858, August 27.—N^o 1944.

EVANS, FREDERICK JOHN.—“ An improvement applicable to “ gas purifying.”

“ The object of this invention is to obtain a material which will “ be energetic in its action, easy of production, and inexpensive. “ To this end take turnings, borings, and filings of iron or scrap, “ or small pieces of iron in the form of shot, for example, and “ expose the same to gases or liquids, whether at ordinary or “ elevated temperatures, that will ensure their rapid oxidation. “ When the surfaces of the turnings, &c. of iron are completely “ coated with oxide or rust, the metal thus oxidized is ready for “ use in the dry gas purifiers, where it is to be employed in the “ manner usually practised when purifying gas with iron oxides “ obtained by other means. The mode preferred for converting “ iron filings, turnings, &c. into a purifying material, is to mix “ the same with the saturated purifying material, immediately it “ is removed from the purifier, when the chemical action of revi- “ vifying set up by exposure of the material to the air will assist “ in effecting the rapid oxidation of the iron, which may then be “ used with the revivified oxide for the purification of gas. “ When by repeated revivification and use, the purifying mate-

" rial is found to have increased in bulk by mechanical admixture
" of sulphur therewith derived from the impure gas, so as mate-
" rially to impair its energetic action, the material is submitted to
" a furnace heat, as heretofore practised, in order to burn or drive
" off the sulphur, after which the material may be again used as
" an efficient purifier."

[Printed, 3d.]

A.D. 1858, August 31.—N° 1978.

NEWTON, ALFRED VINCENT.—(A communication.)—" An im-
" provement in gas-burners."

This improvement consists in enclosing an ordinary fish-tail burner (which may be provided with a "Scotch tip") within a thin metallic cap properly secured, and provided with a circular opening at the top of about one-tenth or one eighth of an inch in diameter. The cap should have a small space all round between it and the burner. The crown of the cap is made concave, and should be distant from the tip of the burner about one-sixteenth or one-twentieth of an inch; and the margin of the orifice in the cap should be slightly rounded on the exterior. The gas on escaping from the burner touches or grazes the margin of the orifice, and the flame is thereby increased considerably in height, width, thickness, and brilliancy. Much depends on exact adaptation of the cap to the burner.

[Printed, 5d.]

A.D. 1858, September 1.—N° 1983.

PHELPS, WILLIAM.—(A communication from H. P. Gen-
gembre.)—(Provisional Protection only.)—" Improvements in wet
gas meters."

" This invention consists in the employment in wet gas meters
" of an aqueous solution of deliquescent, metallic, and earthy salt
" or salts, and in keeping the salt or salts employed constantly
" neutral by the presence of a base or carbonate of such salt or
" salts. In preparing this solution it is preferred to use hydro-
" chlorate of lime in the proportion of about sixty parts of salt to
" one hundred parts of water; to this solution are added two
" parts of hydrochlorate of iron, and one part of hydrochlorate of
" zinc, and a small excess of lime.

" The liquor having been allowed to settle, the clear part is
" drawn off and filtered, when it is ready to be introduced into

" the meter. A small piece of lime or of carbonate of lime is then placed in the meter, so as to be in contact with the solution, whereby the salt or salts are always maintained neutral."

[Printed, 3d.]

A.D. 1858, September 1.—Nº 1991.

LAING, SAMUEL.—(Provisional Protection only.)—" Improvements in the apparatus employed in the manufacture of gas."

" This invention consists in forming retorts of a barrel shape of a suitable length and diameter, the interior having several ribs around its circumference, the said ribs running through the barrel longitudinally; but, instead of being in a straight line parallel with the axis of rotation, it is preferred to set them or form them at an angle from each end, by which the materials are caused in their rotation to move or collect towards the centre part of the barrel, whilst the tar is by this means also collected from the ends at the centre, and being carried over, is caused to fall on the hottest part or the retort. The front end or mouth of the retort is formed with a flange to receive a cover for charging or discharging the retort, and behind the flange the retort is suitably formed for revolving upon friction bearing wheels or rollers, and a cast-iron throat plate is suitably formed so as to surround and fit accurately the throat of the retort, and prevent the escape of the flame and smoke from the oven furnace, and exclude the indraft of cold air."

[Printed, 3d.]

A.D. 1858, September 14.—Nº 2082.

LUIS, JOSÉ.—(A communication.)—" Coke and gas kilns."

" These kilns are for the conversion of small coal into coke for the extraction of gas, coal tar, and ammoniacal waters, are as follows :—

" The kilns which are preferable for smith's coal are of a horizontal form, being one yard in width and six yards in length, and the height of the pit-coal in the oven about twenty inches."

" For the coal between smith's coal and glance coal a kiln of the same length is used; but the width in this case is only twenty-seven inches instead of one yard."

" And lastly, for the glance or close burning coal and stone coal, or for a mixture of glance coal and smith's coal, or stone

" coal, vertical kilns must be used of a quadrangular or rectangular form, holding a quantity of coal, which sinks of its own weight, or is pressed down, and is heated by tubes surrounding the entire circumference."

The carbonization is conducted in such a regulated manner that the vapour and steam are driven off first, the heat is then continued for 18 hours till all the gas is distilled. The gas may be returned and burned under the retorts. At the termination of the process all condensed bituminous matter on the vault of the furnace may be burned off by the introduction of heat.

[Printed, 1s. 4d.]

A.D. 1858, September 21.—N° 2119.

DE PARIENTE, LEON.—(A communication.)—" Improvements in apparatus to be applied to gas burners, with the object of increasing the lighting power of the gas flame."

This invention consists in " applying to gas burners of any description, and more particularly to the kind called Manches-ter and bat's-wing burners, an apparatus consisting chiefly of one or more wires of platinum, or other suitable metal or material, inserted in such manner in the gas flame issuing from the burner, as properly to divide the said flame, thereby allowing a better introduction of atmospheric air into the same, for the effect of increasing its illuminating power."

[Printed, 6d.]

A.D. 1858, September 21.—N° 2120.

MALVEZIN, JEAN CLEMENT EMILE.—(Provisional Protection only.)—" An improvement in the manufacture of tubes, pipes, or mains for conducting liquids of any description or gas, or for other similar purposes."

" These improvements relate to tubes, pipes, or mains for conducting liquids of any description or gas, or for other similar purposes ; such, for instance, as tubes for transmitting sounds ; and consist in manufacturing them by means of tissue or yarn of cotton, or of any other suitable textile material impregnated or covered with suitable bituminous or other matters. The said tubes may be manufactured by hand by rolling the tissues or yarns at the required thickness round a suitable mandril or core, from which the same is afterwards taken off, or which may remain, as required in the interior, in which case the mandril must neces-

" sarily be hollow, as this rolling on the mandril or core may be
" done by any suitable machinery, at the same time passing the
" tissues or yarns through suitable impregnating or covering bath
" or baths."

[Printed, 3d.]

A.D. 1858, September 23.—Nº 2137.

JALOUREAU, ALFRED FAUVIN.—“ Improvements in the manu-
“ facture of pipes.”

This invention consists, “ first, the manufacture of pipes of
“ sheets of paper, cloth, or other fabrics or materials superposed
“ by rolling or winding them in a cylindrical form [on a mandril],
“ being rendered adherent during the progress of rolling or wind-
“ ing by means of a waterproof mastic, and more particularly by
“ means of a bituminous or caoutchic mastic.

“ Second, in the application of such pipes to the incasing of
“ pipes or tubes of earthenware, glass, wood, or metal, so as to
“ strengthen or preserve them, or render them stanch and water-
“ proof, to resist acids, &c.

“ Third, in manufacturing rolled bituminous pipes, consisting
“ of a body of paper, cloth, or other suitable material, in a sheet
“ or sheets, and having an internal lining of waterproof varnish,
“ and an external coating of bitumen and sand.”

[Printed, 7d.]

A.D. 1858, October 2.—Nº 2195.

MONIER, HYPOLITE.—“ A new gas burner.”

This invention consists in using vitrifiable bodies in making
burners of various forms; such substances may be crystal, glass,
porcelain, &c., and may be combined with parts of the burners
made of metal; such vitrifiable bodies are easily drilled, do not
blacken by use, are not subject to oxydation, &c. The drawings
attached to this Specification show numerous forms of burners
applicable to moderator lamps as well as to gas.

(See Drawings.)

[Printed, 1s.]

A.D. 1858, October 6.—Nº 2223.

MALAM, WILLIAM.—“ Improvements in apparatuses for the
“ manufacture of gas.”

“ This invention consists in a new and portable arrangement of apparatuses for the manufacture of gas from oils and grease alone, or combined with gas from coal or other like carbonaceous materials. Over a fire protected by fire lumps is placed two retorts, into which oil is fed through gauge tubes from above. Over these retorts in a suitable chamber is placed coke, and above this chamber is fitted a chamber containing fat or grease. Flues from the furnace at the bottom of the apparatus, surround the coke chamber and grease vessel. The gas generated from the fat or grease is made to descend and mix with that from the oil, and is passed through one or more strata of cleansing material. Instead of coke, ordinary coal may be placed in the coke chamber, when it becomes an ordinary retort, and the gas generated from the coal may be mixed or not with that from the oil and grease.”

[Printed, 6d.]

A.D. 1858, October 6.—N° 2225.

BAYLIS, CHARLES.—“ An improved mode of constructing and arranging underground chambers in populous cities or towns, for the reception of gas and water pipes and telegraph wires.”

This invention “ relates to a method of arranging, enclosing, and protecting gas and water pipes and telegraph wires, so as to admit of access being obtained with facility to any of them or any part thereof, without disturbing the pavement of the street or way under which they may be placed, or interfering with or obstructing the traffic of the road or way.

“ This object is effected by placing these pipes and wires in underground chambers, composed of lengths of cast iron or other tubing of any suitable or convenient size and form, and joined together at their ends, so as to form a continuous chamber or gallery, in which openings are made at top, either in all the lengths of tubing, or at such convenient intervals as may be desired.”

[Printed, 10d.]

A.D. 1858, October 16.—N° 2312.

GILLARD, JOSEPH PIERRE.—“ Improvements in generating hydrogen, and in the means of, and apparatus for applying the same to lifting and heating purposes.”

This invention relates in great part to improvements on a patent obtained by M. Gillard on the 22 November 1849.

By this invention the steam required is obtained from any suitable boiler, heated by the waste heat of the furnace, and is caused to be superheated before entering the generating retort, containing the charcoal, by passing it through pipes laid into the brickwork of the furnace. The steam is brought in contact with the charcoal or other decomposable substance contained in the retort by means of pipes and roses with perforated holes, and the number or size of these holes is adjusted to the different temperatures of the various parts of the retort. The injection tube may be of cast iron, china or fire clay, but the roses or spouts should be entirely of china or fire clay to prevent oxidation.

Second, the retorts employed are protected from the action of the fire by a covering of fire-bricks, and suitable flues and dampers are provided to direct the heat and draft from the furnace upwards to the top of the arch or vault, and then direct its course downwards among the retorts into horizontal flues, through which it escapes to the chimney.

Third, relates to regulating the pressure of the gas in the interior of the retorts, and consists in the adaptation of a "regulator or "small gas-holder" which will admit of the return of gas from the purifiers should the pressure on the retort fall below one inch, or accelerate its flow when the pressure becomes excessive.

Fourth, relates to an improved "purifier," which consists of a vessel divided by a partition into two compartments; each part is provided with shelves upon which the lime is laid in layers. The gas is caused to percolate upwards through the lime contained in the first compartment, and is from thence conducted by a descending pipe to the bottom of the second, and caused again to percolate upwards through the lime. The purifier is covered with a lid, the rim of which, as also a vertical dividing plate, enter into a hydraulic joint.

Fifth, consists in purifying the gas made according to this invention, by means of a mixture of "carbonate of soda and "hydrated lime or lime water;" or by means of a "solution of "tribasic acetate of lead."

Sixth, consists in regulating the pressure of gas in gas-holders by means of a suitable vessel containing more or less water, as required, placed on the top of the bell of the gas-holder.

Seventh, consists in substituting for the iron ring of the argand

burner one "of platinum, platinated iridium, or other suitable "inoxidizable metal;" and in the use of china or of crystal for gas burners.

Eighth, consists in the use of wire wicks made of an alloy of platinum and iridium, or other suitable metal, to impart luminousness to the hydrogen flame. The patentee prefers the round conical wick with the wires laid in a slanting direction, and rather wider at the top of the cone than at the base.

[Printed, 8d.]

A.D. 1859, October 18.—N^o 2325.

NEWTON, WILLIAM EDWARD.—(A communication.)—(Provisional Protection only.)—"Improvements in apparatus for "lighting gas and other lamps."

"These improvements relate to what is called the 'discharge' "or 'spark' for effecting ignition in place of the current, "whereby a wire has been heretofore heated to redness, to effect "the intended object.

"In carrying out the invention a battery is connected by wires "with an inductive apparatus, and this apparatus is again connected by wires with platinum points. The discharge from one "point to the other across a space is effected by opening and "closing the circuit at a small wheel attached to the inductive "apparatus; a second battery is connected by wires with the "magnet for operating the armature, and opening and shutting "the gas burner. A magnet is fixed underneath the bed piece "with its poles approaching near the armature; a lever is attached "to the armature, and extends back under a part which is "supported upon the pivot points of screws fixed in the stands of "the apparatus. A spring connected with a pawl is placed underneath the armature lever; this pawl is made to act on a ratchet "wheel fixed to the burner. Carefully insulated copper wires are "connected with the inductive apparatus, and platinum points "are connected with the insulated wires, and brought opposite to "each other over the tip of the burner. The burner with the "various connecting parts is designed to take the place of ordinary "gas burners and cocks."

[Printed, 8d.]

A.D. 1858, October 19.—N^o 2332.

ALLAN, ALEXANDER; WHIMSTER, THOMAS; and GRAY, ROBERT.—"Improvements in steam boilers; also applicable in

" part to gas meters, lamps, and lubricating and other apparatus
" requiring a constant liquid level, and in part to pressure-indicat-
" ing apparatus."

This invention relates, first, to a mode or modes of supplying boilers or other vessels with water, &c., and preserving the level of the water in the boiler at a required point. For this purpose a separate closed vessel or "fountain," of suitable form, is provided, which is connected with the steam chamber of the boiler by means of a pipe, and which dips into the feed water in the fountain to a level nearly coinciding with the required level of the water in the boiler; the fountain is likewise connected to the boiler by means of a second pipe, which passes from the bottom of the fountain into the boiler at a point beneath the surface of the water therein contained. When the level of the water in the boiler falls below its desired height a compensating flow from the fountain sets in and restores the true level. Both pipes are provided with stop-cocks, which on being closed, and the cock opened of a third pipe, communicating between the fountain, and a suitable supply of water placed elsewhere, water will rush in by the third pipe, in consequence of the condensation of steam, and re-fill the fountain. Two fountains may be applied to one boiler, so that one may thereby be always in operation, and the stop-cocks may be replaced by slide valves, actuated together and simultaneously by means of the hand or by suitable mechanism.

Second, relates to pressure guages, which may be adapted to the fountains above referred to, or to other vessels requiring the pressure or vacuum to be indicated, and may consist of "two glass tubes fitted into a horizontal tube or vessel containing an elastic fluid such as air, and a liquid such as water or mercury, and it is by the space occupied by the air that the pressure is indicated. The steam (or other elastic fluid), the pressure of which is to be indicated, communicates directly or by means of an intermediate fluid with the upper end of one of the tubes, this communication being by preference from below, through a small tube passing centrally up the glass tube. The pressure acting down one tube forces the liquid up the other tube, compressing the air in the latter." A graduated scale is attached. "If the fluid pressure in the fountain or vessel communicating with the guage is less than that of the atmosphere, the air in the further tube expands and forces the liquid up the nearer tube, which last has likewise a graduated tube adapted to it, to show the intensity of the

" vacuum or the pressure below the atmosphere." The drawings attached to the Specification show numerous modifications of this apparatus, different forms of tubes, &c. Such pressure guages are supplied with suitable cocks for testing and remeasuring the air, &c.

Third, the "dip-pipe fountain" already described may be advantageously applied to wet gas meters, for the purpose of ensuring an uniform level of the water in the meter. "The action is the same as that of the apparatus described as applied to a steam boiler, and it will be obvious that the water level can be adjusted with the greatest nicety by lengthening or shortening the dip-pipe." The application of the "dip-pipe fountain" principle to meters may be variously modified.

Fourth, consists "in constructing gas meters, so that almost the entire rectangular chamber in front above the waste water chamber forms the fountain chamber."

Fifth, in "the placing of the mouth of the overflow pipe in gas meters fitted with fountains in front of the mouth of the dip-pipe to ensure the emptying of the fountain, and closing of the inlet valve when the meter is tilted forward.

Sixth, in "the arranging of the valve-box and fountain of the gas meter, so that the float may be placed directly below the inlet valve, and act directly upon it.

The "dip-pipe fountain," in which a pipe communicating with the atmosphere dips down in the fountain to the level corresponding to that at which the liquid is to be maintained, may be applied advantageously to "open vessels;" as also to lamps, and to lubricating apparatus, and to other purposes.

[Printed, 1s.]

A.D. 1858, October 19.—N^o 2336.

GOSSAGE, WILLIAM.—(Provisional Protection only.)—"Improvements in the utilization of alkali waste."

" First, the separation of sulphuretted hydrogen from such mixed gases [as arise from the action of acids on alkali waste] by causing it to be decomposed either by sulphurous acid gas, or by compounds of nitrogen and oxygen, thereby causing the formation of water, and the deposition of sulphur.

" The said invention also comprises means whereby alkali waste can be caused to absorb oxygen from atmospherical air, and the use of such oxydized 'alkali waste' for the production of sul-

" phurous acid gas, and carbonic acid gas. The absorption of " oxygen from atmospherical air is effected by means of 'alkali " waste' by causing such waste to be exposed to the atmosphere, " and I extricate sulphurous acid gas and carbonic acid gas from " such oxydized waste by causing it to be acted upon by muriatic " acid or other acid liquors, and I apply sulphurous acid so extri- " cated for the decomposition of sulphuretted hydrogen, as herein- " before mentioned."

" The said invention also comprises the extrication of sulphu- " retted hydrogen and carbonic acid gases, also sulphur from " 'alkali waste,' by causing such waste to be decomposed by the " action thereupon of such acid liquors as are obtained by the use " of muriatic acid in the manufacture of chlorine, which manufac- " ture is usually conducted in connexion with the manufacture of " alkali, and therefore simultaneously with the production of " alkali waste."

" Also the production of sulphuret of iron, and sulphuret of " manganese, or one of such sulphurets, by the action of 'alkali " waste' on the acid liquors obtained in the ordinary manufac- " ture of chlorine, by the use of muriatic acid, and the applica- " tion of metallic sulphuret so obtained for the purpose of " producing sulphurous acid gas."

[Printed, 3d.]

A.D. 1858, October 29.—N^o 2413.

KIRRAGE, WILLIAM.—"An improved elastic combination of " materials impervious to atmospheric influences, as a substitute " for hard woods, metal, leather, or felting, and for other " purposes."

" This invention consists in the manufacture of certain com- " pounds to be employed for various purposes."

" If the new compound is intended to be employed for iron " gutter flanges, or for washers to pipes of water-works, or for " flange joints, washers or collars to gas, steam, or water pipes, but " in all cases where the heat is under two hundred degrees Fahren- " heit, or for packing under iron columns, or between stone and " metal, or metal and metal, proceed as follows:—Take twelve " pounds of india-rubber, four pounds of gutta-percha, twenty- " five pounds of Stockholm or coal tar, sixty pounds of fine pow-

“ dered chalk, four pounds of hemp or other fibre, and ten pounds of sulphur. These quantities will make one hundredweight of the compound. The india-rubber is first masticated or brought into a state of pulp, by a masticator which works the india-rubber without tearing it, aided by a heated chamber, the heat being higher or lower according to the nature of the india-rubber, care being taken not to use a temperature which will injure the rubber. The other materials constituting the compound are added, and thoroughly incorporated with the rubber after it has been reduced to the pulpy state by the masticator.”

“ The above compound having been formed by moulds, or rolled, cut, or stamped into the required articles, is placed in a steam chamber and hardened by the action of steam, or from thirty to fifty pounds pressure on the square inch [or by heat alone.] The compound may be varied in its proportions when applied to other purposes; any required tint may be imparted to it by the addition of suitable colouring matter.”

[Printed, 4d.]

A.D. 1858, November 4.—N° 2468.

BAGGS, ISHAM.—(Provisional Protection only.)—“ Improvements in telegraphing by electricity.”

This invention, in so far as it relates to “gas,” consists in liberating hydrogen gas in a glass cell containing dilute sulphuric acid by means of electricity, from the points of telegraph wires, for telegraph purposes, and under a vacuum or partial vacuum, whereby the bubbles of gas are made to expand to two or three hundred times their ordinary size, and the indications are thus made more distinct. The electricity may be produced by suitable apparatus. The production of the gas bubbles may be observed through a microscope, telescope, &c.

[Printed, 3d.]

A.D. 1858, November 10.—N° 2526.

LOCKE, EDWARD.—(Provisional Protection only.)—“ Improvements in the construction of gas meters.”

“ This invention relates to an improvement in that class of gas meters known as wet meters, the object being to provide for the efficient working of the meter at variable heights of the water level.

“ To this end the measuring drum is mounted in a swinging frame instead of in stationary bearings, and kept at a determinate

" height with respect to the water level, by supporting it by means " of a float, or its equivalent. The frame which carries the drum " may be forked and jointed to the meter case, and the float may " be connected with the bearings or the axle of the drum. The " motion of the drum is communicated to the counting apparatus " by means of a deep toothed pinion, which allows for the rise and " fall of the drum.

" At both the entrance and exit side of the meter it is proposed " to insert slips of glass into the case, for the purpose of showing " the level of the water, and to remove from the glass any deposit " that might hide the water level; a wiper (made of sponge or " other suitable substance) is applied to the inner surface of the " glass by means of a rod, which passes through the case. Thus, " when an inspection is required, the wiper may, from outside of " the meter, be drawn over and caused to clean the glass suf- " ficiently to exhibit the water level. This wiper applies also to " other kinds of glass gauges."

[Printed, 3d.]

A.D. 1858, November 10.—Nº 2527.

JUDKINS, CHARLES TIOT.—" Improvements in gas regulators."

" These improvements consist in fixing a bar or other support " across gas regulators, constructed according to the invention of " Charles Esplin, for which Letters Patent, Nº 1943, and bearing " date the 27th day of August 1855, were granted to him, and " across gas regulators constructed according to the Patentee's " invention, for which Letters Patent, Nº 1760, and bearing date " the 24th day of July 1856, were granted to him; and to such " bar or support is suspended a balance lever rod at right angles " therewith, and one end of such balance rod is connected with " the disc, or with the spindle of the valve, which is placed nearer " the end of the regulator at which the outlet is situated than has " been hitherto done; and a weight or counterpoise is made to " slide or screw on, or otherwise connected with the other end of " the balance rod, so that it will, by moving such weight to or " from the point of suspension of the balance rod, regulate the " amount of pressure at which the valve in the inlet chamber is " intended to be closed; and by such arrangement a disc or " internal cover of cast-iron, or other material of greater weight " than has hitherto been used in regulators, may be employed."

[Printed, 3d.]

A.D. 1858, November 16.—N° 2578.

BRUÈRE, ALEXANDRE MARTIN.—(Provisional Protection only.)

—“ The novel application of hydrogen gas to various purposes in “ the arts.”

“ The substances to which the invention is intended to be chiefly applied are coal (both rich and poor), anthracite, wood, bones, lignites and peat, or other carbonaceous matters that are susceptible of being or are usually operated upon in retorts for the purpose of distillation. Minerals and ores may also be advantageously operated upon in the presence of hydrogen, which should be passed in a state of gas through the mass in distilling coal for the purpose of producing illuminating gas ; it will be found that by introducing a current of hydrogen gas into the retorts, gas of far superior illuminating power to that produced by the ordinary means will be obtained.”

“ Also in operating upon wood [or bones] for the production of charcoal ; charcoal of better quality will be produced by the introduction of hydrogen gas into the carbonizing chamber.”

“ Hydrogen gas will also be found useful in reducing ores by passing the gas through the mass while it is in a heated state.”

“ It will be understood by chemists that this energetic reducing and purifying power of pure hydrogen will render its application to the treatment of a variety of substances very advantageous.”

[Printed, 3d.]

A.D. 1858, November 18.—N° 2604.

LESLIE, JOHN.—“ Improvements in the manufacture of gas.”

“ These improvements in the manufacture of gas for the purposes of illumination from parrot coal, cannel coal, boghead coal, and other mineral bituminous matters capable of affording paraffine, consist in subjecting such mineral bituminous matters to distillation at low temperatures, as is well understood, in order to obtain the products distilled over in a condensed liquid form, and then to subject such liquids to processes of purification, [when required] in order to fix or remove the ammonia, sulphur, and other impurities, and then to subject the purified liquids to destructive distillation, by which very pure gas is obtained, whereby also the expensive machinery and processes used for purifying illuminating gas obtained by the existing process of destructive distillation of the bituminous mineral is dispensed

" with." The hydro-carbons thus obtained may be purified by first washing them in dilute muriatic acid in preference, and, secondly, with a solution of caustic soda. The coal, when it contains a large quantity of sulphur, may be mixed, before distillation, with 10 per cent. of slacked lime; or it may be steeped in a solution of common salt and quicklime.

[Printed, 4d.]

A.D. 1858, November 20.—N^o 2632.

WADSWORTH, JAMES.—" Improvements in gas burners, and " in the means or methods of, and in apparatus for moderating or " retarding, regulating or governing the flow and pressure of gas " used for purposes of illumination, and in street lamps or lanterns " for shielding flame from the action of wind and rain."

" This invention consists, firstly, in the use in gas-burning " apparatus of tortuous, winding, or spiral channels or passages, " and the method of constructing such tortuous, winding, or " spiral channels or passages, through which the gas is conveyed " to the burner, and by which the current thereof is deflected in " its course for the purpose of retarding and moderating its velo- " city, and of causing the gas to issue from the burner under a " reduced pressure." For this purpose, in preference, a loose screw may be inserted in the barrel of the burner, and the gas caused to pass round the threads of the screw.

" Secondly, the use in gas-burning apparatus of a button or " mushroom shaped stud or deflector, supported centrally by its " stem, and not by contact or attachment of any part of its edge " or periphery with or to the interior surface of the pipe, tube, " or cavity within which it is placed."

" Thirdly, the use of the button or mushroom shaped stud or " deflector before mentioned, in place of a transverse disc or plate " supported by the sides or interior surface of a chamber in the " apparatus before referred to."

" Fourthly, the construction, combination of parts, and arrangement of the apparatus for regulating the pressure, and for governing and shutting off the flow of gas to the burner, and more particularly the use of a spirally grooved plug or screw for diminishing and increasing the pressure of gas." The barrel of the burner being slightly tapped, the screw is caused to enter it, and by depressing the screw more or less the tortuosity of the

gas passage will be increased or diminished, if screwed entirely down the gas passage will be stopped altogether.

"And, fifthly, the application of tortuous, winding, or spiral passages for the admission of fresh, and evacuation of vitiated air, smoke, and vapour, into or from lanterns or street lamps." The lamp may be provided at the bottom with a chamber or cylinder fitted up with a spirally twisted plate of thin metal, and with a corresponding cylinder at the top of the lamp ; the first is for the introduction of air for combustion, and the second for the exit of the burned air or smoke.

[Printed, 7d.]

A.D. 1858, November 23.—N° 2659.

NEWTON, ALFRED VINCENT.—(A communication.)—(Provisional Protection only.)—"Improvements in retorts for generating " illuminating gas."

"This invention relates to the construction of an upright retort, " which presents a very large internal heated surface, so arranged " as to cause the fluid substance from which the gas is to be " generated to be received on a portion of the surface of the retort " that is but moderately heated, and to be conveyed gradually " from the coolest to the hottest part of the retort, thereby pre- " venting the distillation of the gas-making material into volatile " oil, and preventing, in a great degree, its carbonization on the " surface of the retort. For this purpose the retort is fitted with " a helical or screw-like column, having a central tube, in which " are lateral openings between the threads of the column ; a case " or cover fits closely to and around the peripheral surfaces of " these threads, and combines with the column to make a helical " passage. The column is supported upon feet, which rest on the " bottom of the retort ; and the case or cover has an opening or " openings between it and the bottom of the retort. In the cover " of the retort an opening is made and fitted with a lid, which is " sealed or luted with fusible alloy, but which can be taken off to " admit air to the retort, to burn out any residuary matters which " may be deposited on the interior surfaces of the retort in the " gas-making process, thereby obviating the necessity of removing " the entire head or cover of the retort."

[Printed, 3d.]

A.D. 1858, November 24.—N° 2662.

HUGHES, RICHARD HUGH.—“Improvements in means or apparatus employed when lighting by gas.”

“These improvements have for their object, first, the prevention of accident upon the escape of gas through the hydraulic or such like joints of gas burners, by adapting thereto a whistle or other indicating means to indicate such escape. Secondly, they consist in the application of spring or elastic cushions to sliding or hydraulic connexions of gas fittings, to check momentum, when too rapid motion has been given to the parts in sliding them. Thirdly, in the application of hinge pieces to the under side of pendant burners, for the purpose of supporting the glass or glasses, [instead of using rigid supporters. The hinged parts may be turned up, and the glass removed downward]. Fourthly, in forming globular or other formed glasses, capable for the most part of enclosing the light, with a turned-over edge, or projection or projections at the upper part, adapted to receive hooked or such like suspended supports, and to the application of such like hooked or other suspended supports for that purpose. [The hook-shaped supports may be hinged to admit of the glass being taken off.] For use with some class of burners, where ventilation is required from the under side, such glasses are made open at the lower part, and formed to receive a separate piece, [ground or otherwise adapted to shade or conceal the light at that part,] leaving openings adapted to admit and conduct the required amount of air to the burner or burners within the glass, or the lower part may be simply perforated for the required admission of the air.”

[Printed, 10d.]

A.D. 1858, November 25.—N° 2673.

EASTWOOD, HENRY.—(Provisional Protection only.)—“Improvements in purifying gas for illuminating purposes.”

“This invention consists in passing or forcing gas through or in close contact with either common spirits of wine, or vegetable or mineral naptha, or a combination of these liquids.”

[Printed, 3d.]

A.D. 1858, November 25.—N° 2680.

LOOS, FREDERICK.—“Improvements in gas regulators.”

“This invention consists, first, in constructing gas regulators with equilibrium valves placed at an angle with each other so as

" to equalize the pressure on them and prevent condensation from accumulation, so as to impede the full passage of gas, and making the spindle or shaft hollow, so as to contain oil or other suitable matter, for lubricating the points or centres on which it works."

" Secondly, in forming the annular ring [of the regulator] separately for the convenience of attaching it, and for the more economical manufacture of the regulator; also in a hinge joint to a guide arm attached to one side of the regulator, to insure in the floating drum or inverted vessel a horizontal motion; also the adjusting of the valves by the use of set screws.

" Thirdly, in the use of an annular cup or ring attached to the top of the floating inverted cup, to contain mercury or other suitable fluid, which cup forms a gas or air tight joint, by having the tube to which the burner is attached sufficiently long to dip in the fluid, which tube is also attached gas-tight to the cover, the cover being also gas-tight.

" Fourthly, in constructing the valve attached to the lower end of the outlet pipe, the outlet pipe passing through a guide tube to keep the floating cup in a horizontal position. One or more outlet pipes may be used attached to the floating cup attaching the burner immediately on the outlet or outlets, which burner is in immediate connection with the floating cup.

" Lastly, in the tinning or otherwise coating the rim or lower part of the rim of the inverted floating vessel, so as to form an amalgam with the mercury, which causes the mercury to attach itself to the floating vessel."

[Printed, 10d.]

A.D. 1858, November 26.—N° 2692.

RICHARDS, WILLIAM.—" Improvements in the construction of gas meters."

" These improvements consist, first, in constructing the measuring wheel or drum with chambers or compartments, having a diminished capacity near the axle. This end is attained by forming the wheel with sides inclining inwards towards the axle, instead of making the sides parallel to each other: thus the great variation in the measuring capacity of the chambers at present, by the alteration of water line, will be reduced to an considerable amount. When using this construction of drum wheel, the part called the 'hollow cover' can be made flat or

" concave (the conical space at the inlet side of the wheel allowing sufficient space for the insertion of the spout), and thus a broader drum than heretofore can be mounted in a given size of case. In addition to contracting the measuring chambers laterally near the axis of the drum, it is proposed also to place the cross partitions which divide the wheel or drum into chambers at a much greater angle to the axis than heretofore, in order that the resistance to the water may be as uniform as possible, and the inlet and outlet passages are so arranged of each measuring chamber, that the bulk of water entering by the inlet to displace the gas shall be as nearly as possible equal to that of gas replacing the water in the outlet.

" Second, in the inner case an opening is made above the water level, for the passage of the gas from the drum to the outlet pipe. To this opening a valve seat is fitted, and in front of the valve seat is hung a valve, the same being attached to a pendant-weighted rod hinged to the case. When, therefore, the meter is tilted forward, the valve will fall into its seat and close the discharge orifice, and if tilted in the opposite direction, the water would rise and close the opening made in the case for the passage of the gas to the exit pipe of the meter."

[Printed, 10d.]

A.D. 1858, November 27.—N° 2705.

GERNER, HENRY—(Provisional Protection only.)—" Improvements in the mode of and apparatus for manufacturing gas for illumination and heating."

" When making illuminating gas a retort is used fitted with a pipe for supplying the liquid hydrocarbon to be converted into rich carburetted hydrogen gas; and also a second pipe for supplying water, which is intended to yield pure hydrogen. These pipes terminate in a pierced coil, and the coils are surrounded with scrap iron, or other suitable incombustible material, which fills the retort about two-thirds full; these fluids flowing down their respective pipes, and circulating round the coils, find an exit through the perforations in the coils in the form of fine streams of vapor, which, on coming in contact with the red-hot scrap iron in the retort, become immediately converted into gas. The hydrogen gas obtained by the separation of the water into its elements, is generated at the hottest part of the retort, and

" travelling upwards it meets with the hydrocarbon gas, and
 " mingling therewith takes up and chemically combines with the
 " excess of carbon that would otherwise be deposited in the retort.
 " The combined gases then pass off by a siphon pipe into a washer
 " or purifying vessel, where it is cooled and made fit for burning."
 " When manufacturing gas for heating purposes, it is obtained
 " solely by the decomposition of water into its elements."

[Printed, 3d.]

A.D. 1858, December 1.—N^o 2740.

LAMING, RICHARD.—“ Improvements in purifying gas, and
 “ in turning sulphuretted hydrogen, carbonic acid, and ammonia,
 “ or their compounds to profitable account.”

This invention consists in “ purifying gas by scrubbing or
 “ washing it first with raw ammoniacal liquor, finally with water,
 “ and intermediately with the mixed products of those two scrub-
 “ bings or washings subsequently to their desulphuration by any
 “ means, either wholly or in part.

“ Purifying gas by passing it through three or more scrubbers
 “ or washers in succession ; the first being used with a solution of
 “ ammonia sufficiently free from saturating acids to convert both
 “ the carbonic acid and the sulphuretted hydrogen of the gas into
 “ soluble salts, and the remainder in succession with the same
 “ portion of water for finally washing out the ammonia and its
 “ compounds, combining the alternate oxidation of hydrated
 “ sulphuret of manganese by atmospheric air, with the use of the
 “ resulting compound for the total or partial desulphuration of
 “ solutions containing hydro-sulphate of ammonia.

“ Preparing a compound of iron or of manganese for desulphu-
 “ rating solutions containing hydrosulphate of ammonia, or for
 “ purifying gas, or other useful purposes, by decomposing a
 “ solution of any muriate of either of those metals by means of
 “ sulphuret of calcium, or available mixture or compound
 “ thereof, and afterwards exposing the precipitate to the air to
 “ become oxidized.

“ Decomposing mixtures of sulphuret of sodium, and a car-
 “ bonate of ammonia by heat in the absence both of fluidity and
 “ of temperatures high enough to drive off the carbonate of
 “ ammonia undecomposed ; also the presence in such mixtures,
 “ when submitted to decomposition by heat, of carbonaceous or
 “ other suitable absorbent matter for enabling one or both of

“ the reagents to be added in solution, without the prejudicial
“ interferences of fluidity or pastiness.

“ Recombining the ammonia given off in the reciprocal decom-
“ position of sulphuret of sodium, and a carbonate of ammonia
“ with fresh carbonic acid, whereby it is made serviceable for a
“ repetition of the process many times in succession.

“ Manufacturing solution or water of ammonia, more or less
“ pure, by receiving into cold water ammonia distilled from liquor
“ first deprived of sulphuretted hydrogen by revivifiable metallic
“ substances, and also of carbonic acid, if present, by lime, with or
“ without an intermediate purification of the ammonia during the
“ distillatory process. Also, the use of caustic solutions of soda
“ or potash, and of fixed oil for the purification of ammonia gas
“ on its way to cold water, by which it is to be absorbed.

“ Distilling muriate of ammonia from mixtures of sulphate of
“ ammonia and common salt from earthen retorts into chambers
“ for condensing the vapours in detached crystals or flowers, and
“ the consolidation into cakes of flowery crystals of muriate of
“ ammonia by mechanical pressure.

“ Obtaining as a precipitate hydrated sulphuret of manganese
“ for oxidation by atmospheric air by decomposing solutions of
“ the mixed sulphates of manganese and soda by sulphuret of
“ sodium with the simultaneous production of sulphate of soda in
“ solution.”

[Printed, 5d.]

A.D. 1858, December 3.—N° 2764.

NOONE, GEORGE EDWARD.—“ Improvements in machinery
“ for generating gas from coal.”

These improvements consist, first, in forming the back of the fire-place of a kitchen range of a “cylindrical form,” which, when attached by screws to another cylindrical portion, will form a retort.

Second consists of a “semicircular feeder” to supply the retort with coal, and to remove the coke when exhausted. The feeder has a perforated and moveable front, and being placed on a table, may be screwed forward under the retort, and then elevated into the retort by other screws suitably adapted. The apparatus is provided with a sheet-iron shield to keep dust from the gearing.

Third relates to an arrangement of purifier, in which one end of each of the six syphon pipes is caused to enter or dip under the surface of the water, while the other ends are above the surface of the water. This mode of sealing prevents explosion. The gas is further caused to pass through trays of charcoal.

Fourth relates to a mode of "regulating the pressure and self-supplying the whole machine with water." The gas on leaving the purifier is caused to pass through a drum, divided into four parts, and enclosed in a casing. The drum is actuated by the flow of gas, assisted by a small overshot water-wheel, attached to the axis of the drum, and supplied with water from a tank. When the supply of gas ceases the water flows into a cistern, and then raising a float, cuts off the supply of water, and at the same time, by means of a rod, lever, and crank, a call bell is rung.

Fifth relates to an apparatus for generating steam and gas at one time. The drawings show a domestic arrangement of apparatus, by which the heat employed in making gas may be suitably applied to heat "steam boilers, stills, hot plates, or any other body requiring heat."

Sixth relates to a carriage or iron truck for withdrawing "hot feeders" from the furnace, and replacing others. The truck may be elevated or depressed as required by a screw lever and perpendicular rod.

[Printed, 1s. 1d.]

A.D. 1858, December 11.—N° 2843.

DUDGEON, STEPHEN.—"An improved gas regulator."

This invention consists, first, in suspending the "disc or cover" (the inverted vessel) of the common regulator upon "centres or "axes or other suitable bearings, placed near one of its ends, the "points of these centres or axes resting against bosses or pads."

"The second arrangement adopted for operating the valve is to "remove the disk, and to place loose weights on the top of the "valve cover; the amount of pressure can thus be regulated at "pleasure, a cap being provided in the top surface of the regulator, "in which cap the valve and cover, with the super imposed "weights, can rise or fall, and the aperture being more and more "closed by the lifting of the valve and cover by the pressure of "the gas in the apparatus, by this means the supply of gas to "the burners is regulated and maintained uniform under every "variety of pressure in the main supply."

[Printed, 7d.]

A.D. 1858, December 18.—N^o 2900.

MACKENZIE, JAMES.—“ Improvements in those gas burners “ known as ventilating sun burners.”

“ This invention consists in perforating or forming apertures in “ parts of the inner funnel, pipe, or chimney, and also in parts of “ the outer one of the usual sun burners, in order to allow the “ light to pass, and in filling up such openings with talc, mica, or “ other suitable transparent material. The usual shadow on the “ ceilings or walls will thus be prevented, and all parts of the “ ceiling will be equally lighted. Any ornament to the chimneys “ will thereby also be lighted up.”

[Printed, 5d.]

A.D. 1858, December 24.—N^o 2952.

JOHNSON WILLIAM BECKETT.—“ Improvements in the em- “ ployment of gas for generating steam, and in engines connected “ therewith.”

“ These consist, firstly, in regulating the combustion of gas “ accordingly as more or less heat is required to be imparted to the “ boiler. For this purpose, firstly, the ‘governor’ of the engine “ is caused to act upon cocks or other such apparatus, so as to “ regulate the flow of gas. Secondly, for the like purpose the “ pressure or the temperature of the steam or water are caused to “ act similarly to the ‘governor.’

“ Another part of this invention relates to the prevention of “ accident from the water becoming deficient. In such cases the “ supply of gas is caused to be shut off or diminished by the water “ falling below a certain level. A practical method of ac- “ complishing this consists in the employment of a fusible plug, “ which, by melting, allows water or steam from the boiler to flow “ into the gas pipe.

“ Another part of this invention consists in the employment of “ several independent chambers, provided with wire gauze for “ burning ‘aerated gas,’ the supply to such chambers being so “ arranged that the governor may be caused, [by means of suitable “ levers, rods, and cocks] to act upon them consecutively, that is, to “ close one before it operates upon another, so that the others may “ still have their proper supply of gas in proportion to areas of “ their chambers; or the whole may be closed at once.

“ Another part of this invention consists in the application of “ ‘a master light,’ for the purpose of relighting the burners after

" the supply has been shut off and reopened ; [the master light
" being provided with a separate supply of gas.]

" Fifthly consists in an arrangement of engine and boiler to be
" used in conjunction with boilers heated by gas. The boiler is
" formed as a vertical cylinder [or pillar] of cast iron with a con-
" cave bottom of copper ; to the side of this the steam cylinder is
" bolted, and the main shaft passes transversely over the boiler,
" carrying the fly wheel upon the opposite side to the cylinder."

[Printed, 11d.]

A.D. 1858, December 27.—Nº 2960.

DAVIES, JOHN.—(A communication from James Lawrence Butler.)—"An improved portable self gas-generating lamp."

This invention consists in an arrangement of lamp whereby the hydrocarbon or other suitable oil employed is contained in a vessel or reservoir from which it flows through a pipe to the burner. The pipe is suitably provided with a cock, and is bent and arched over the burner, that it may be there strongly heated. The ascending limb of this pipe is filled with asbestos or other suitable material to more perfectly "equalize the flow of the liquid." The bend of the pipe over the flame, when the heat is applied, is formed into "a chamber or retort," over which is attached an "arch or "heat retainer."

[Printed, 1s.]

A.D. 1858, December 30.—Nº 2987.

BELL, THOMAS.—"Improvements in purifying gas."

" For this purpose a substance which at the present time has
" but a very small or no commercial value may be employed, viz.,
" the residuum resulting from the working of Longmaid's pro-
" cess for the manufacture of sulphate of soda. This process con-
" sists in roasting common salt with iron pyrites, which results in
" the conversion of the soda into sulphate, and of the iron into
" red oxide. Afterwards the soda salt is dissolved out, leaving a
" residuum which is the substance employed. For the same pur-
" pose the oxide of iron refuse obtained by burning iron pyrites in
" the manufacture of sulphuric acid may be employed, and this
" substance in some cases is prepared by grinding and washing,
" so as to obtain an impalpable powder, which, when dry, is ready
" for use. Burnt pyrites, which is simply ground and passed

" through a sieve, having about twenty holes to the inch, will purify gas sufficiently, although not so well as when it is prepared by washing. By bringing haematite iron ores to a red heat, and afterwards grinding and washing them, they are reduced to a form in which they are suitable for use in the purification of gas. A substance suitable for the purification of gas may also be prepared by roasting copperas either alone or with lime or magnesia, together with coal or carbonaceous matter. The following is the mixture preferred:—To twenty parts of copperas is added two parts of lime and one part of coal, all in a fine powder, and heat the mixture in a reverberatory furnace to a dull red heat. Afterwards it is ready to be placed in the purifiers as before, and it is worked in a similar manner to the other materials before mentioned."

[Printed, 3d.]

A.D. 1858, December 31.—N^o 3007.

JOHNSON, JOHN HENRY.—"Improvements in the manufacture or production and casting of steel, and in the apparatus employed therein."—(A communication from Monsieur Sudre.) This invention consists, first, in the manufacture or production and casting of steel, and the apparatus employed therein.

Second, in the system or mode of manufacturing steel by the combined use of a reverberatory furnace, in which the mixture capable of forming steel is protected by a layer of neutral or basic scoria from the action of the flame of the furnace.

Third, in the production of cast steel by the introduction of blistered or natural steel on to the hearth of a reverberatory furnace, such hearth being first covered with melted slag.

Fourth, in the application and use in the manufacture and production of steel of all reverberatory furnaces having the hearth heated from below by a return flame and supplied with a hot blast of air, whereby an inferior fuel may be used in melting the steel.

Fifth, in the application and use of a reverberatory furnace with a protective layer of slag, or of a separate vessel or receiver of any kind, heated to a high degree of temperature as an intermediate receptacle for the melted steel, when making large castings.

Sixth, in the application and use of neutral or basic scoria as a protective layer above the molten metal.

"Such furnaces may be supplied by the carbonic oxide gas
"arising either from blast furnaces or from special generators
"where low priced fuel is burnt. The arrangements requisite for
"burning this gas are well known, and need not therefore be
"described here. By using the hot blast and a suitable apparatus
"for mixing the jets of gas and air, a sufficiently high temperature
"may always be obtained to melt the most refractory steel."

[Printed, 6d.]

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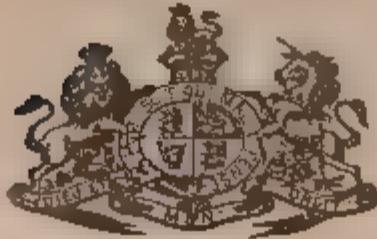
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